

P59845PC00 sequence listing
SEQUENCE LISTING

<110> Expressive Research B.V.
<120> Modulating developmental pathways in plants
<130> P59845PC00
<140> PCT/NL03/00524
<141> 2003-07-17
<150> EP 02077908.8
<151> 2002-07-17
<160> 110
<170> PatentIn version 3.2
<210> 1
<211> 227
<212> PRT
<213> Arabidopsis thaliana
<400> 1

Met Ala Ala Glu Gln Pro Leu Asn Gly Ala Phe Tyr Gly Pro Ser Val
1 5 10 15
Pro Pro Pro Ala Pro Lys Gly Tyr Tyr Arg Arg Gly His Gly Arg Gly
20 25 30
Cys Gly Cys Cys Leu Leu Ser Leu Phe Val Lys Val Ile Ile Ser Leu
35 40 45
Ile Val Ile Leu Gly Val Ala Ala Leu Ile Phe Trp Leu Ile Val Arg
50 55 60
Pro Arg Ala Ile Lys Phe His Val Thr Asp Ala Ser Leu Thr Arg Phe
65 70 75 80
Asp His Thr Ser Pro Asp Asn Ile Leu Arg Tyr Asn Leu Ala Leu Thr
85 90 95
Val Pro Val Arg Asn Pro Asn Lys Arg Ile Gly Leu Tyr Tyr Asp Arg
100 105 110
Ile Glu Ala His Ala Tyr Tyr Glu Gly Lys Arg Phe Ser Thr Ile Thr
115 120 125
Leu Thr Pro Phe Tyr Gln Gly His Lys Asn Thr Thr Val Leu Thr Pro
130 135 140
Thr Phe Gln Gly Gln Asn Leu Val Ile Phe Asn Ala Gly Gln Ser Arg
145 150 155 160

P59845PC00 sequence listing

Thr Leu Asn Ala Glu Arg Ile Ser Gly Val Tyr Asn Ile Glu Ile Lys
165 170 175

Phe Arg Leu Arg Val Arg Phe Lys Leu Gly Asp Leu Lys Phe Arg Arg
180 185 190

Ile Lys Pro Lys Val Asp Cys Asp Asp Leu Arg Leu Pro Leu Ser Thr
195 200 205

Ser Asn Gly Thr Thr Thr Thr Ser Thr Val Phe Pro Ile Lys Cys Asp
210 215 220

Phe Asp Phe
225

<210> 2
<211> 416
<212> PRT
<213> Arabidopsis thaliana
<400> 2

Met Val Arg Ser Asn Asp Val Lys Phe Gln Val Tyr Asp Ala Glu Leu
1 5 10 15

Thr His Phe Asp Leu Glu Ser Asn Asn Asn Leu Gln Tyr Ser Leu Ser
20 25 30

Leu Asn Leu Ser Ile Arg Asn Ser Lys Ser Ser Ile Gly Ile His Tyr
35 40 45

Asp Arg Phe Glu Ala Thr Val Tyr Tyr Met Asn Gln Arg Leu Gly Ala
50 55 60

Val Pro Met Pro Leu Phe Tyr Leu Gly Ser Lys Asn Thr Met Leu Leu
65 70 75 80

Arg Ala Leu Phe Glu Gly Gln Thr Leu Val Leu Leu Lys Gly Asn Glu
85 90 95

Arg Lys Lys Phe Glu Asp Asp Gln Lys Thr Gly Val Tyr Arg Ile Asp
100 105 110

Val Lys Leu Ser Ile Asn Phe Arg Val Met Val Leu His Leu Val Thr
115 120 125

Trp Pro Met Lys Pro Val Val Arg Cys His Leu Lys Ile Pro Leu Ala
130 135 140

P59845PC00 sequence listing

Leu Gly Ser Ser Asn Ser Thr Gly Gly His Lys Lys Met Leu Leu Ile
 145 150 155 160
 Gly Gln Leu Val Lys Asp Thr Ser Ala Asn Leu Arg Glu Ala Ser Glu
 165 170 175
 Thr Asp His Arg Arg Asp Val Ala Gln Ser Lys Lys Ile Ala Asp Ala
 180 185 190
 Lys Leu Ala Lys Asp Phe Glu Ala Ala Leu Lys Glu Phe Gln Lys Ala
 195 200 205
 Gln His Ile Thr Val Glu Arg Glu Thr Ser Tyr Ile Pro Phe Asp Pro
 210 215 220
 Lys Gly Ser Phe Ser Ser Ser Glu Val Asp Ile Gly Tyr Asp Arg Ser
 225 230 235 240
 Gln Glu Gln Arg Val Leu Met Glu Ser Arg Arg Gln Glu Ile Val Leu
 245 250 255
 Leu Asp Asn Glu Ile Ser Leu Asn Glu Ala Arg Ile Glu Ala Arg Glu
 260 265 270
 Gln Gly Ile Gln Glu Val Lys His Gln Ile Ser Glu Val Met Glu Met
 275 280 285
 Phe Lys Asp Leu Ala Val Met Val Asp His Gln Gly Thr Ile Asp Asp
 290 295 300
 Ile Asp Glu Lys Ile Asp Asn Leu Arg Ser Ala Ala Ala Gln Gly Lys
 305 310 315 320
 Ser His Leu Val Lys Ala Ser Asn Thr Gln Gly Ser Asn Ser Ser Leu
 325 330 335
 Leu Phe Ser Cys Ser Leu Leu Leu Phe Phe Phe Leu Ser Gly Asp Leu
 340 345 350
 Cys Arg Cys Val Cys Val Gly Ser Glu Asn Pro Arg Leu Asn Pro Thr
 355 360 365
 Arg Arg Lys Ala Trp Cys Glu Glu Glu Asp Glu Glu Gln Arg Lys Lys
 370 375 380
 Gln Gln Lys Lys Lys Thr Met Ser Glu Lys Arg Arg Arg Glu Glu Lys

P59845PC00 sequence listing

385 390 395 400

Lys Val Asn Lys Pro Asn Gly Phe Val Phe Cys Val Leu Gly His Lys
405 410 415

<210> 3
<211> 1634
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(563)
<223> signal sequence (exon 1)

<220>
<221> CDS
<222> (655)..(708)
<223> propeptide (exon 2)

<220>
<221> CDS
<222> (797)..(856)
<223> propeptide (exon 3)

<220>
<221> CDS
<222> (955)..(1131)
<223> conserved cysteine motif (exon 4)

<400> 3
attaaacgcc aaacactaca tctgtgtttt cgaacaatat tgcgtctgcg tttccttcat 60
ctatctctct cagtgtcaca atgtctgaac taagagacag ctgtaaacta tcattaagac 120
ataaactacc aaagtatcaa gctaattgtaa aaattactct catttccacg taacaaattg 180
agttagctta agatattagt gaaactaggt ttgaattttc ttcttcttct tccatgcatc 240
ctccgaaaaa aggggaaccaa tcaaaactgt ttgcatatca aactccaaca ctttacagca 300
aatgcaatct ataatctgtg atttatccaa taaaaacctg tgatttatgt ttggctccag 360
cgatgaaagt ctatgcatgt gatctctatc caacatgagt aattgttcag aaaataaaaa 420
gtagctgaaa tgtatctata taaagaatca tccacaagta ctattttcac acactacttc 480
aaaatcacta ctcaagaaat atg aag aag atg aat gtg gtg gct ttt gtt acg 533
Met Lys Lys Met Asn Val Val Ala Phe Val Thr
1 5 10
ctg atc atc tct ttt ctt ctg ctt tct cag gtaaactgtt aaaaccattt 583
Leu Ile Ile Ser Phe Leu Leu Leu Ser Gln
15 20
tcaagactac cttttctcta ttccagacaa accaaagtaa aacaatgaaa aatctctctg 643
gtctttcata g gta ctt gca gag ttg tca tca tcc agc aac aat gaa act 693
Val Leu Ala Glu Leu Ser Ser Ser Ser Asn Asn Glu Thr
25 30

748

gagtaatata taaggaaatg ttggcttctt ttttttgttg ctaatcag acg aat gac 805
Thr Asn Asp
40

atc agttagtcta ctctttcaac actctaattc ctttgttcta agtatttttt 906
Ile

gca tgc gca agg aga tgc agt aag aca tcg agg aag aaa gtt tgt cac 1011
Ala Cys Ala Arg Arg Cys Ser Lys Thr Ser Arg Lys Lys Val Cys His

acc tcc ggc aac aca gca tca tgt cct tgc tac gcc agt atc cgt aca 1107
Thr Ser Gly Asn Thr Ala Ser Cys Pro Cys Tyr Ala Ser Ile Arg Thr
95 100 105 110

tcatcttctg attatgtttc ttcttttggt atgttgcatg tgtgatgtgt gagcttatta 1221

ttatgttgat tgttgacata attcaactat ataatttgta tcgattccga ataataagat 1281

gagtgatttt attggctatt aaqttttttt tttttttttt tgggcacaat ggctattaag 1341

ttttaaacat ctgattttat tqgttacaaa aaacaacaaa gtttcatttt catattaaca 1401

caaaatctcc atacatatta ccaaaccaaa aaaatacaca aqqqqqaaqg aqaccaacgg 1461

ttcttggttc agagtttgca tcttgtttga gccgtcaccg tttcttagac ttaacagcca 1521

caacaccttt ataaagcttc acgcgaccc tcaacgcac tcgccgagcc cgaacccac 1581

tattgttttg atcaaacaac aaaacttctt caaacgcatt caatgccaaa ggc 1634

Met Lys Lys Met Asn Val Val Ala Phe Val Thr Leu Ile Ile Ser Phe
1 5 10 15

P59845PC00 sequence listing

Leu Leu Leu Ser Gln Val Leu Ala Glu Leu Ser Ser Ser Ser Asn Asn
20 25 30

Glu Thr Ser Ser Val Ser Gln Thr Asn Asp Glu Asn Gln Thr Ala Ala
35 40 45

Phe Lys Arg Thr Tyr His His Arg Pro Arg Ile Cys Gly His Ala Cys
50 55 60

Ala Arg Arg Cys Ser Lys Thr Ser Arg Lys Lys Val Cys His Arg Ala
65 70 75 80

Cys Gly Ser Cys Cys Ala Lys Cys Gln Cys Val Pro Pro Gly Thr Ser
85 90 95

Gly Asn Thr Ala Ser Cys Pro Cys Tyr Ala Ser Ile Arg Thr His Gly
100 105 110

Asn Lys Leu Lys Cys Pro
115

<210> 5
<211> 1453
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(533)
<223> signal peptide (exon 1)

<220>
<221> CDS
<222> (664)..(691)
<223> propeptide (exon 2)

<220>
<221> CDS
<222> (772)..(950)
<223> conserved cysteine motif (exon 3)

<400> 5
gaaaaaaaga agaaaagata atgggtccgta ttaatatagt tgaaaacttg aaactacttt 60
ttagtttgta tataatacag tagactaggg atccagttga gtttctttct ttattttgag 120
tttgtgttta tgtttgattt tacgttttta tatgtaaata agatatttta cgaattatgg 180
ttttatttgg gtagaagttg tagaatgact taaacaatca agtggcagaa tgagatatat 240
aaagtaatat aatatatgta ccgttattaa cttattgtac atgtgaatga ggaagcttac 300
acacacacac cttctataaa tagctgacaa aactggttgt tacacacaac acattcataa 360

P59845PC00 sequence listing

```

atctctcaaa gtaagaacta agagctttac tacagtccta ctctctacac atcttctctc 420
tctctcaaga gctagtcatg gccaaactca taacttcttt tctcttactc acaattttat 480
tcactttcgt ttgtctcact atg tca aaa gaa gct gag tac cat cca gaa agt 533
                        Met Ser Lys Glu Ala Glu Tyr His Pro Glu Ser
                        1          5          10
gtaagttttt attttttggg aaaatagaaa gtgtaagttt tataattcat tcaattgttt 593
ttgcctttcc ctttctattt attgctataa atctaatacc cgcgttaaaa tttgttttga 653
aattaaacag tat gga cca gga agt ctg aaa tca tac c gtaagtaaaa 701
                Tyr Gly Pro Gly Ser Leu Lys Ser Tyr
                15          20
acttcttctt cttttatgaa tcttgtttct tattatatat caaataaaaa ctcgattatc 761
atgattgcag aa tgt gga gga caa tgc aca agg aga tgt agc aac aca 809
                Gln Cys Gly Gly Gln Cys Thr Arg Arg Cys Ser Asn Thr
                25          30
aag tat cat aag cca tgc atg ttc ttc tgc caa aag tgt tgt gct aaa 857
Lys Tyr His Lys Pro Cys Met Phe Phe Cys Gln Lys Cys Cys Ala Lys
35          40          45
tgc ctt tgt gtc cct cca ggc acg tac ggc aac aaa caa gtg tgt cct 905
Cys Leu Cys Val Pro Pro Gly Thr Tyr Gly Asn Lys Gln Val Cys Pro
50          55          60          65
tgt tac aac aac tgg aag act caa caa ggt gga cca aaa tgt cca 950
Cys Tyr Asn Asn Trp Lys Thr Gln Gln Gly Gly Pro Lys Cys Pro
70          75          80
taaacaaaaa cattgagaga gaaaccccaa tctgtttcct attttattta attatttcca 1010
gtatgctttt gttgtcgtga tgggttaaatt atagtgtttt tgcagggtatc atttatcatc 1070
gataaacaat atcatataaa atcttctatg tttctttcac gttttgtttc ttttgttgta 1130
gtcaatacac gaaatgtgta tggaccttct aattaggaat atataaaaatt ttattttatta 1190
attagataat ctttcgtata gttaaaattc caaggattac ttttgattcg tttgggacaa 1250
tctattttat attttacttt ctaagtttgt ataactatat cttaaaagtg ttagacagag 1310
tcctaatagat tttagtataa ttgttactat ttagttacgc ttcgaaaatt tggaactttt 1370
ccaaagtggg ctatatcaat ttgattcact aatctgcgct tccttctagt tttttacaat 1430
tatggagatt tttcgacgat gat 1453

```

<210> 6

<211> 80

<212> PRT

<213> Arabidopsis thaliana

<400> 6

```

Met Ser Lys Glu Ala Glu Tyr His Pro Glu Ser Tyr Gly Pro Gly Ser
1          5          10          15

```

P59845PC00 sequence listing

Leu Lys Ser Tyr Gln Cys Gly Gly Gln Cys Thr Arg Arg Cys Ser Asn
20 25 30

Thr Lys Tyr His Lys Pro Cys Met Phe Phe Cys Gln Lys Cys Cys Ala
35 40 45

Lys Cys Leu Cys Val Pro Pro Gly Thr Tyr Gly Asn Lys Gln Val Cys
50 55 60

Pro Cys Tyr Asn Asn Trp Lys Thr Gln Gln Gly Gly Pro Lys Cys Pro
65 70 75 80

<210> 7
<211> 1472
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(566)
<223> signal sequence (exon 1)

<220>
<221> CDS
<222> (669)..(708)
<223> propeptide (exon 2)

<220>
<221> CDS
<222> (791)..(969)
<223> conserved cysteine motif (exon 3)

<400> 7
cacaactttt atacgcacca ccaaccgacc cattttgaaa aagagaaaat aaaccacaaa 60
aacacacata aataatatgc tgataacaat gtcttaaaaa tctatttacc atttctagta 120
atcaatatct attgcaaaaa atatttataa gaatacaaat gaaaaatgat aaaatacaaa 180
tgatttctca attacctaaa aaatataaaa atgtcttact ttattttcag ccactgttgg 240
aaagtacttg caatcatatc gtattttgaa ttataaaact cagaaacaat tattttccct 300
gaaaagttaa aacttttaat aagatattta taaaataaaa agaatagtct agaccgaaaa 360
tgggggtcggg tgtccatcca aaggagtgtc ataaatagaa ccctccaagt tctcattagg 420
acacaacaac taaaaccaca ttatcatta cagtctgatt tgagctaagt tctctcatca 480
taaactctcc ttggagaatc atg gct att tca aaa gct ctt atc gct tct ctt 533
Met Ala Ile Ser Lys Ala Leu Ile Ala Ser Leu
1 5 10
ctc ata tct ctt ctt gtt ctc caa ctc gtc cag gctgatgtcg tacgtctttt 586
Leu Ile Ser Leu Leu Val Leu Gln Leu Val Gln
15 20

P59845PC00 sequence listing

```

tcattcacaaa ctaattatac tcaatataat acttatgttt tcaaaaacat atttctcaca      646
tgttacaaca atattcttgc ag gaa aac tca cag aag aaa aat ggt tac gca      698
                        Glu Asn Ser Gln Lys Lys Asn Gly Tyr Ala
                        25                               30

aag aag atc g gtaattatat gatttttatt aaacctaacg ttaaatttag      748
Lys Lys Ile
                        35

agtgagatta ataatctgtg tttttctttc ttgtatatat ag at tgt ggg agt      801
                        Asp Cys Gly Ser

gcg tgt gta gca cgg tgc agg ctt tcg agg agg ccg agg ctg tgt cac      849
Ala Cys Val Ala Arg Cys Arg Leu Ser Arg Arg Pro Arg Leu Cys His
40                               45                               50                               55

aga gcg tgc ggg act tgc tgc tac agg tgc aac tgt gtg cct ccg ggt      897
Arg Ala Cys Gly Thr Cys Cys Tyr Arg Cys Asn Cys Val Pro Pro Gly
                        60                               65                               70

acg tac gga aac tac gac aag tgc cag tgc tac gct agc ctc acc acc      945
Thr Tyr Gly Asn Tyr Asp Lys Cys Gln Cys Tyr Ala Ser Leu Thr Thr
                        75                               80                               85

cac ggt gga cgc cgc aag tgc cca taagaagaaa caaagctctt aattgctgcg      999
His Gly Gly Arg Arg Lys Cys Pro
                        90                               95

gataatggga cgatgtcggt ttgttagtat ttactttggc gtatatatgt ggatcgaata      1059
ataaacgaga acgtacgttg tcgttgtagg tgtgagtact gtattattaa tggttctatt      1119
tgtttttact tgcaagtttt cttgttttga atttgttttt ttcataatttg tatatcgatt      1179
cgtgcattat tgtattatnt caatttgtaa taagattatg ttacctttga gtggttggtt      1239
atcatacttt ttttctatgg taagaggttt tggaaaagta tcgagaatga tatataaagt      1299
aattttgata tcgacgcaag atgataacta ctagactagc tgagtataag aatattgatg      1359
tatatatattg cggacaattt tgaatttatt ataccattat ttaatcacga ccatataaaa      1419
ataattcttg tttgcgttat aatttgtgtt aatacgatag agtagacaaa tga      1472

```

<210> 8
 <211> 95
 <212> PRT
 <213> Arabidopsis thaliana

<400> 8

Met Ala Ile Ser Lys Ala Leu Ile Ala Ser Leu Leu Ile Ser Leu Leu
 1 5 10 15

Val Leu Gln Leu Val Gln Glu Asn Ser Gln Lys Lys Asn Gly Tyr Ala
 20 25 30

P59845PC00 sequence listing

Lys Lys Ile Asp Cys Gly Ser Ala Cys Val Ala Arg Cys Arg Leu Ser
35 40 45

Arg Arg Pro Arg Leu Cys His Arg Ala Cys Gly Thr Cys Cys Tyr Arg
50 55 60

Cys Asn Cys Val Pro Pro Gly Thr Tyr Gly Asn Tyr Asp Lys Cys Gln
65 70 75 80

Cys Tyr Ala Ser Leu Thr Thr His Gly Gly Arg Arg Lys Cys Pro
85 90 95

<210> 9
<211> 1834
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(579)
<223> signal sequence (exon 1)

<220>
<221> CDS
<222> (1087)..(1331)
<223> propetide + conserved cysteine motif (exon 2)

<400> 9
ataactaaca atggttgagt ggagatgtgc ttttagtcaa gtggttaa atatttgact 60
tcgttttttt cattggagtt tgactctact aagttgtgtt tcctcgcgta gtaagaattg 120
gttatggatt agaccgtatc gatctaaaga tgtcaaagaa aaaaaaatgt ggttgtgtaa 180
agtaaataatg tagattgtgg cggattaaag tatgttttga ttcacatcat tattgttatt 240
ttttcatgaa ttctaaatgt aaagttctta taatcttatg ttacttttta caaattgtaa 300
ggattactct gaaatttggt atcgaattct aagacaaata caaaataaca atgactgaac 360
aagttgataa aacataatgg aaggaataat actgcagttc tattaaatac taaagaagtt 420
ggtagattgg cctataaaaag gagaataaag agaccacaag aaggtctatt attcggggac 480
taaagaaagc caaagaaaac atg aaa ata ata gtc tcc atc tta gtg tta gcc 533
Met Lys Ile Ile Val Ser Ile Leu Val Leu Ala
1 5 10
tct ctt ctt cta atc agt tca tct ctt gct tcg gct act ata tca g 579
Ser Leu Leu Ile Ser Ser Ser Leu Ala Ser Ala Thr Ile Ser
15 20 25
gttggttcta atctcttcaa gaatcttctt ctctctatct ttttttctt cataaagtta 639
gttatgttat gattggttta ggtcacaatt gtttctttat gctttcgttt ccataagaaa 699
aatattacaa atattaacta gaacaacata acatgcaaac gagtaataca aaattcatta 759

P59845PC00 sequence listing

```

ttatgatcaa aacaatcatg aattagttgg acttatttgt taaattccga aaatctcact      819
aaaataaagt gaacttcatt tacatggcctt tagacgcaaa atctttaagg gtatctacac      879
aagtttgga tgaataattt cttgcgatgg tagtgtagaa ggatctagaa gatccacaag      939
atcattagtg tatcttctag atcctttttac attgagaagt gaggagatat ttgttgtatt      999
agaaagaatt atagtgaagt aaatttttta actatgtacg atcatttata tacgatactt    1059
ttattaagga tcttgtggat cttctag at  gct ttt ggt agt ggc gcg gta gct    1112
                               Asp Ala Phe Gly Ser Gly Ala Val Ala
                               30                               35

ccg gca ccg cag agc aaa gat gga ccg gcg tta gag aaa tgg tgt gga      1160
Pro Ala Pro Gln Ser Lys Asp Gly Pro Ala Leu Glu Lys Trp Cys Gly
                               40                               45                               50

cag aaa tgt gaa ggg aga tgc aaa gaa gcg ggg atg aaa gat cgg tgt      1208
Gln Lys Cys Glu Gly Arg Cys Lys Glu Ala Gly Met Lys Asp Arg Cys
                               55                               60                               65

ttg aag tat tgt ggg ata tgt tgc aaa gac tgt cag tgt gtt cct tca      1256
Leu Lys Tyr Cys Gly Ile Cys Cys Lys Asp Cys Gln Cys Val Pro Ser
                               70                               75                               80

ggc act tat ggg aat aag cat gaa tgt gct tgc tat cgt gac aag ctc      1304
Gly Thr Tyr Gly Asn Lys His Glu Cys Ala Cys Tyr Arg Asp Lys Leu
                               85                               90                               95

agt agc aaa ggc act cct aaa tgt cct tgattctatt tctttccaac      1351
Ser Ser Lys Gly Thr Pro Lys Cys Pro
100                               105

caaaaattta aataaatgaa taagagagat ccagtaaact aatataaaac tataaatgga      1411
tcttttgttt atgatttttt ttttttcatt tctattttta cgaatttgtc ttggtctttt      1471
tgaagtaagt ttttaaatat tgaaaagtgc taaaattatg tggaaatcga taatgttaat      1531
gaatgatata atatataagt cctcagtttt tgtaagaaac ttgaatataa ataatatttc      1591
atcaaacata ataaataaat atattgtata attagattgg ctcaaccgat ataaacaatt      1651
gaatcgaatt ttttcttcta aatatttaat catccaaatt tgtattgtac caatgaatga      1711
gatggttatg aggactagaa gatagagagg agaagaacgt gtttggtaaa ataattatga      1771
tggagttgag acaactttta agagatttta aaaagactga ctaacgtgtt aggttcacga      1831
cgt                                                                    1834

```

<210> 10
 <211> 108
 <212> PRT
 <213> Arabidopsis thaliana

<400> 10

Met Lys Ile Ile Val Ser Ile Leu Val Leu Ala Ser Leu Leu Leu Ile
 1 5 10 15

P59845PC00 sequence listing

Ser Ser Ser Leu Ala Ser Ala Thr Ile Ser Asp Ala Phe Gly Ser Gly
20 25 30

Ala Val Ala Pro Ala Pro Gln Ser Lys Asp Gly Pro Ala Leu Glu Lys
35 40 45

Trp Cys Gly Gln Lys Cys Glu Gly Arg Cys Lys Glu Ala Gly Met Lys
50 55 60

Asp Arg Cys Leu Lys Tyr Cys Gly Ile Cys Cys Lys Asp Cys Gln Cys
65 70 75 80

Val Pro Ser Gly Thr Tyr Gly Asn Lys His Glu Cys Ala Cys Tyr Arg
85 90 95

Asp Lys Leu Ser Ser Lys Gly Thr Pro Lys Cys Pro
100 105

<210> 11
<211> 1782
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(578)
<223> signal sequence (exon 1)

<220>
<221> CDS
<222> (678)..(701)
<223> propeptide (exon 2)

<220>
<221> CDS
<222> (816)..(964)
<223> conserved cysteine motif (exon 3)

<220>
<221> CDS
<222> (1251)..(1269)
<223> conserved cysteine motif (exon 4)

<400> 11
gccaatgggt aactgaggaa gaaggataag accaaaaaaaa aaactaaaat ggacagattg 60
aattagtaaa aagataaatt ctaaaaaccg aaacaaatct taagttggtg tatatacatc 120
tgcattgacc aacaaaagaa agtagactga aatttatttg aaaatgatct tgtaaaggca 180
tattatatat ttaatttagg aaatgaatgt taaatccttt aaattgtttt gatttcacaa 240
aaggataaag aaatattggt tacatacatc ttaatgtgtt gaccaaaca aataaaatgt 300
gataagaaac aataaaacca ttttgacaa agttcttata gttttaatat tctttaattg 360

P59845PC00 sequence listing

tcatttggtta gtgactaata atattacatt aaacctaattg tataaataga agcccatct	420
tctacgccctt tataattagc aacaacccaaa aacattcatt tgtcattttg tctcctcttt	480
tgttttctct gatcactagt atg gct gta ttc aga gtc ttg ctt gct tct ctt	533
Met Ala Val Phe Arg Val Leu Leu Ala Ser Leu	
1 5 10	
ctc ata tct ctt ctt gtc ctc gac ttc gtc cat gcc gat atg gtg	578
Leu Ile Ser Leu Leu Val Leu Asp Phe Val His Ala Asp Met Val	
15 20 25	
gtacaatttt aacaacccaaa tatattttct tatttgattt tattttttca caacttttgt	638
ctacgttcta atggaatttt tttcaaaaata ttcattgcag acg tcg aat gac gcc	692
Thr Ser Asn Asp Ala	
30	
cct aaa atc ggtaatatct ctatcatata aacacgtacg ttgaatttct	741
Pro Lys Ile	
atatacgtgt gtttaattga agttttgggt ggaaattgta tgtatttgta gattgcaaca	801
gcagggtgcca agag cgg tgc agt ctt tcg agt agg cca aat ctt tgt cac	851
Arg Cys Ser Leu Ser Ser Arg Pro Asn Leu Cys His	
35 40 45	
aga gcg tgc ggg act tgc tgc gct agg tgc aac tgc gtg gca ccg ggc	899
Arg Ala Cys Gly Thr Cys Cys Ala Arg Cys Asn Cys Val Ala Pro Gly	
50 55 60	
aca tcc gga aac tac gac aaa tgt ccg tgc tat ggt agc cta acc acc	947
Thr Ser Gly Asn Tyr Asp Lys Cys Pro Cys Tyr Gly Ser Leu Thr Thr	
65 70 75	
cac gga gga cgc aga aa gtgtccttaa aaactctgtc gctgtttgat	994
His Gly Gly Arg Arg Lys	
80	
ttgatttcgt ttataatact ttacttttat gagagtaatt gtggttatct tcttggaat	1054
tattaaaaag caaaagaaag agaattgtat acgtcatgtg caactcttcg atctttgttt	1114
tagtgtttat ccaatttgta cttgttggtt tggttcctgg ttaacattag gtctgaaaag	1174
gtattgtttt tcattataca attcactaaa taggcattcgt acttgcatat aaaataaaga	1234
atgaagagag aagtaa a aga gtt ttc ttt ttt tac tcatggaagt taggcaatgg	1289
Arg Val Phe Phe Phe Tyr	
85 90	
gtttaaatat ggtaacaaca gaattggagg ggacttaatg aactatgacg taaaactgag	1349
agcgattgaa tatgtaacgt taccaacaat accaataaaa ttatgaaaga tagtatatga	1409
aattacgttt aattaatgtt tccgggttga atgtattata tatagaagta acagtacgat	1469
ttttattaca tttttgtaca agattcctag aaaggataaa cctctataaa gttaataata	1529
gtcttgagtc ttgactcttc gaggcaaata aattcaccgc ataattaatc gttcaactat	1589

P59845PC00 sequence listing

tattctatat tctatataac atgagcttca acaaaagaag catcaatcat atcttcaaca 1649
 gtataactgca gtgtaatgta acatattcaa gatcaaaccg gacaaaaaag caagataccg 1709
 tcgaaacaat caaaccatcat gtatcataaa ctcccatctt ctctttccta aattccccgt 1769
 cgcttgacac atc 1782

<210> 12
 <211> 90
 <212> PRT
 <213> Arabidopsis thaliana

<400> 12

Met Ala Val Phe Arg Val Leu Leu Ala Ser Leu Leu Ile Ser Leu Leu
 1 5 10 15

Val Leu Asp Phe Val His Ala Asp Met Val Thr Ser Asn Asp Ala Pro
 20 25 30

Lys Ile Arg Cys Ser Leu Ser Ser Arg Pro Asn Leu Cys His Arg Ala
 35 40 45

Cys Gly Thr Cys Cys Ala Arg Cys Asn Cys Val Ala Pro Gly Thr Ser
 50 55 60

Gly Asn Tyr Asp Lys Cys Pro Cys Tyr Gly Ser Leu Thr Thr His Gly
 65 70 75 80

Gly Arg Arg Lys Arg Val Phe Phe Phe Tyr
 85 90

<210> 13
 <211> 1594
 <212> DNA
 <213> Arabidopsis thaliana

<220>
 <221> CDS
 <222> (409)..(471)
 <223> exon 1

<220>
 <221> CDS
 <222> (555)..(599)
 <223> exon 2

<220>
 <221> CDS
 <222> (785)..(815)
 <223> exon 3

<220>
 <221> CDS

P59845PC00 sequence listing

<222> (913)..(1091)

<223> exon 4

<400> 13

ctttttatttg tttgtgaaaa aaaacaatag cttttatttg tcctaggaat tatttaatag 60

attaaataac agctatTTTT ctcttatttc ttagtgatta aaatatttaa aatacagacc 120

aaaattaatt gtttatgtta atatatTTTt tccttaatcc tttatatata aattgtataa 180

tgcattgtagt taataaattg ttttccaaaa ttcattcata attttattcc taaattattt 240

tgggtcaagaa aacacatctt tgaataatta aatgcttcct tgtatttgat aatttcttga 300

tattttaaaa taccttctat actatgccaa tgttattggg tataaatagg tttaacattg 360

atcctgaaat atatcataag aaaatcaaaa gtgaaataag agatcaaa atg atg aag 417
Met Met Lys
1

ctc ata gtt gtc ttt gtt ata tcc agt ttg ttg ttt gct act caa ttt 465
Leu Ile Val Val Phe Val Ile Ser Ser Leu Leu Phe Ala Thr Gln Phe
5 10 15

tct aat gtaaaaatta ttattatttt ctccatatta tgatttatga attcagagaa 521
Ser Asn
20

ataaagtttt tttttttatg tgtgtatgta cag ggt gat gaa tta gag agt caa 575
Gly Asp Glu Leu Glu Ser Gln
25

gct caa gca cct gca atc cat aag gtatatTTTaa attataaaaat atcaaatact 629
Ala Gln Ala Pro Ala Ile His Lys
30 35

gaataataaa taataaatat attacaacaa gaatatcaat gttatttttc aaactacata 689

attttaaaaat attttattga taacacaaat gtatatattt atcgctcca ttgatttgca 749

ttctaaattt gtttttggtta tccaaccaat ttcag aat gga gga gaa ggc tca 802
Asn Gly Gly Glu Gly Ser
40

ctt aaa cca gaa g gtaaaattggt taaaagatat tatttttatt tatatagtaa 855
Leu Lys Pro Glu
45

atgattgattc aaatcacaac ttaaataatt taattgttga tttatatatt tctgaag 912

aa tgt cca aag gca tgt gaa tat cga tgt tcg gcg aca tct cac agg 959
Glu Cys Pro Lys Ala Cys Glu Tyr Arg Cys Ser Ala Thr Ser His Arg
50 55 60

aaa cca tgt ttg ttt ttt tgc aac aaa tgt tgt aac aaa tgt ttg tgt 1007
Lys Pro Cys Leu Phe Phe Cys Asn Lys Cys Cys Asn Lys Cys Leu Cys
65 70 75

gta cca tcg gga aca tat gga cac aaa gaa gaa tgt cct tgc tac aat 1055
Val Pro Ser Gly Thr Tyr Gly His Lys Glu Glu Cys Pro Cys Tyr Asn
80 85 90

aat tgg acg acc aaa gaa ggt gga cca aaa tgt cca tgaaaacaaa 1101

Asn Trp Thr Thr Lys Glu Gly Gly Pro Lys Cys Pro
95 100 105

<210>	14
<211>	106
<212>	PRT
<213>	Arabidopsis thaliana
<400>	14

Thr Thr Lys Glu Gly Gly Pro Lys Cys Pro
100 105

Page 16

P59845PC00 sequence listing

<220>
 <221> CDS
 <222> (501)..(582)
 <223> exon 1

<220>
 <221> CDS
 <222> (695)..(873)
 <223> exon2

```

<400> 15
taatgctata cttttaatct ataatatata ttagatgtga cttaaggaat ttcaatagtt    60
atacataata ataaaaatga atatttgta gtgttacaaa ctgtgtgtca taatcatcat    120
tcatcaggat ttcaaaaata tctcaaaatt gttgtaagtt catgtaattc gaaatgaatg    180
tgcactataa gaaataaaatt tacaatttaa aaaatgcttc aatactggtt acaaaaaaaaa    240
ctttcaatac tagtattata ctacttactt agtcaaaaaa gtttatgaat atgggttttt    300
ctgtatgtta atatttttaa ctgaaaatag taccgacata acaagtaaag atatctttat    360
ttaaagtaac aaacattaat ttcacttcaa attctcacta ttaaggattc ctctctttgt    420
agccacattt caccatcact actttgtttt cgcatatctt taaattttgt atacgtagca    480
aactctttcg agaaaacaag atg aag ctc gtg gtt gta caa ttc ttc ata atc    533
                    Met Lys Leu Val Val Val Gln Phe Phe Ile Ile
                    1             5             10

tct ctt ctc ctc aca tct tca ttt tct gta ctt tca agt gct gat tcg t    582
Ser Leu Leu Leu Thr Ser Ser Phe Ser Val Leu Ser Ser Ala Asp Ser
                    15             20             25

gtaagtgttt acttaatcta gttaataatt gtaggtcatg catgtatcat tttgaaacaa    642
gttttctgaa attctaagat tttaacatata tatgtgataa atgaattagc ag ca tgc    699
                    Ser Cys

ggt gga aag tgc aat gtg aga tgc tca aag gca gga caa cat gaa gaa    747
Gly Gly Lys Cys Asn Val Arg Cys Ser Lys Ala Gly Gln His Glu Glu
30             35             40             45

tgc ctc aag tac tgc aat ata tgt tgc cag aag tgt aat tgt gtt cct    795
Cys Leu Lys Tyr Cys Asn Ile Cys Cys Gln Lys Cys Asn Cys Val Pro
                    50             55             60

tcg gga act ttt gga cac aaa gat gaa tgt cct tgc tac cgt gat atg    843
Ser Gly Thr Phe Gly His Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met
                    65             70             75

aaa aac tcc aaa ggt gga tcc aag tgt cct tgaacgttct ttgaagatcc    893
Lys Asn Ser Lys Gly Gly Ser Lys Cys Pro
                    80             85

tcatcacata catataactt ctacgtacta tatgtgtgga aatattaatc acattctatg    953
tttgaaatat ataaaaataa atcaatgccc ccaatgttgg aaatcttcaa tgtgatatct    1013
taatatatat cacgaataaa aaagtttaaa tttctcaatc tcatttttaa tctttaatct    1073
    
```

P59845PC00 sequence listing

aatcttcttaa cacatcaacg aatctttaat cttaaatcat gtagataatt atcagagcac 1133
 ctaaacattg cgccgttttg tgattataca aagtaacatc gtgctgtttt tgacttttga 1193
 aaaccacaga tccaaaaact gtttactttc ctctaagaga aagcaaagcc gagtgagtcc 1253
 aagcgagttt tgagagattc gttgactcac taccggagaa cgacgctatg tcagagaccg 1313
 ccgtgtcaat cgattcggac cgatctaagt cggaggaaga agacgaagaa gagtattctc 1373
 cac 1376

<210> 16
 <211> 87
 <212> PRT
 <213> Arabidopsis thaliana

<400> 16

Met Lys Leu Val Val Val Gln Phe Phe Ile Ile Ser Leu Leu Leu Thr
 1 5 10 15

Ser Ser Phe Ser Val Leu Ser Ser Ala Asp Ser Ser Cys Gly Gly Lys
 20 25 30

Cys Asn Val Arg Cys Ser Lys Ala Gly Gln His Glu Glu Cys Leu Lys
 35 40 45

Tyr Cys Asn Ile Cys Cys Gln Lys Cys Asn Cys Val Pro Ser Gly Thr
 50 55 60

Phe Gly His Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met Lys Asn Ser
 65 70 75 80

Lys Gly Gly Ser Lys Cys Pro
 85

<210> 17
 <211> 1689
 <212> DNA
 <213> Arabidopsis thaliana

<220>
 <221> CDS
 <222> (501)..(578)
 <223> exon 1

<220>
 <221> CDS
 <222> (739)..(772)
 <223> exon 2

<220>
 <221> CDS
 <222> (1008)..(1186)

P59845PC00 sequence listing

<223> exon 3

<400> 17

cgctttctat tacacttttt tttcttttta gtcgcacttc acaattagct taattaattt	60
cctaaactcg cttattttcc cttttctata tacagatatt atcattagtg acattttcat	120
tttccaaaca gagcgttttag acactagtca actacacaat ataattttcc aattttcact	180
gagagaaaatg tttttttttt ttttttccaa ggcaagattt tagtcttttg gttctctata	240
cgtgggtaat tagtgattag taattttacac tggtgagtct ttgacattgt ctaagagaca	300
aaaacgacaa gtgtggtacg taattagaaa ttaaaatgac ctacttcccc agaatcacgg	360
catgaacatt ggcaatacca aattttctga ataccattga aggaaatcca cactaatcat	420
tttctctata aatatcttta atccgtttta ttgtttctta agaatcattc attggcaatc	480
aagatttttt aaccaaaaaa atg gcg aat tgt atc aga aga aat gct ctt ttc	533
Met Ala Asn Cys Ile Arg Arg Asn Ala Leu Phe	
1 5 10	
ttc ttg act ctt ctc ttt tta ttg tca gtc tcc aac ctc gtt cag	578
Phe Leu Thr Leu Leu Phe Leu Leu Ser Val Ser Asn Leu Val Gln	
15 20 25	
gtaaaccact caaaacagat tcagttttatt aaagtctgat attgaagttt tatatattac	638
aggctgctcg tggaggtaaaa aatgacaaaa ggctatacat tccttaaaaa tttaatggct	698
attagttttc tgatattgaa gttttatata tatatgacag gct gct cgt ggt ggt	753
Ala Ala Arg Gly Gly	
30	
ggc aaa ctc aaa ccc caa c gtacggactc aaaacttttg ttgtttcata	802
Gly Lys Leu Lys Pro Gln	
35	
tgatcatatt aattttattaa tcactaatta ttgataatgt tgataaataa actttaaagt	862
aacaataatg gtgtttatatt tgtgaaatgt cagttttcta gtatactgta tgctgtgaat	922
tataagcatg aacataaaga tctcaatgat ttgttttttg tttgtttggt gtgatatgct	982
ttttgatgg aaacttcaat tgtag ag tgc aac tca aag tgt agc ttc cgt	1033
Gln Cys Asn Ser Lys Cys Ser Phe Arg	
40 45	
tgt tca gca aca tca cac aag aag cca tgc atg ttc ttt tgc ctc aag	1081
Cys Ser Ala Thr Ser His Lys Lys Pro Cys Met Phe Phe Cys Leu Lys	
50 55 60	
tgt tgc aaa aaa tgt ctt tgt gtt cct cct ggc act ttc ggc aac aaa	1129
Cys Cys Lys Lys Cys Leu Cys Val Pro Pro Gly Thr Phe Gly Asn Lys	
65 70 75	
caa act tgt cca tgt tac aac aac tgg aag act aaa gaa ggc cgt cca	1177
Gln Thr Cys Pro Cys Tyr Asn Asn Trp Lys Thr Lys Glu Gly Arg Pro	
80 85 90	
aaa tgt cct taaaacttct ttttagatat atttgataat attcatctag	1226
Lys Cys Pro	

P59845PC00 sequence listing

95

```

ttttggatta tcaaacactt actactctgt tttaatctgt ttctacaagt tggcgatttg 1286
tctctacact ttttttgtgt cttttgctct taactgttgt gtttggtata cgtgtaagcc 1346
cgcccaatgt gtcattggccg aacttattat gggtacatat ttatgaaatg ggcttcatta 1406
tcaattgatt tgagcctaca aaaatgtagc cataaagccc attaagttgt aattgttaat 1466
atctcagtca taaatatgat tttctatatc tatgatttat ctctagtgtt gatgatgttt 1526
gtatgtggaa gtcattgtct atttgcttcc acggtttaaa aaccatcaac ttgctaagggt 1586
caaattctaa tattactgtg aaaaacatta ttacgtgctg taattatatg aatttatgaa 1646
taggttttaa ttccattttt tcctaatagt gttttatgtc aaa 1689

```

```

<210> 18
<211> 97
<212> PRT
<213> Arabidopsis thaliana
<400> 18

```

```

Met Ala Asn Cys Ile Arg Arg Asn Ala Leu Phe Phe Leu Thr Leu Leu
1           5           10           15

```

```

Phe Leu Leu Ser Val Ser Asn Leu Val Gln Ala Ala Arg Gly Gly Gly
           20           25           30

```

```

Lys Leu Lys Pro Gln Gln Cys Asn Ser Lys Cys Ser Phe Arg Cys Ser
           35           40           45

```

```

Ala Thr Ser His Lys Lys Pro Cys Met Phe Phe Cys Leu Lys Cys Cys
           50           55           60

```

```

Lys Lys Cys Leu Cys Val Pro Pro Gly Thr Phe Gly Asn Lys Gln Thr
65           70           75           80

```

```

Cys Pro Cys Tyr Asn Asn Trp Lys Thr Lys Glu Gly Arg Pro Lys Cys
           85           90           95

```

Pro

```

<210> 19
<211> 1500
<212> DNA
<213> Arabidopsis thaliana

```

```

<220>
<221> CDS
<222> (501)..(563)

```

P59845PC00 sequence listing

<223> exon 1

<220>

<221> CDS

<222> (665)..(719)

<223> exon 2

<220>

<221> CDS

<222> (822)..(1000)

<223> exon 3

<400> 19

taggctggca atttaactct gagacgtctt tcttgatatag agaataaaac atacgcgtgt 60

aaaagaaaac gcgtgaatcg aatgatgagt gttacgttc gatcgagatg ccaccaaadc 120

ttttcattaa aatgaattgt ggaggacata ccacttttaa cgagggtcatt tccactgggt 180

gacatgtgga ctctactttg ggtggcatgt tcatatcttt ccacatcacc atgtaaacgt 240

gaaaacaccc accacactca cttacatctc aaacacatgt cttcattatc gtacgtagct 300

ccaaaaaaaa aaatgaaaac taggtttagt gattctatctt cgcaatgtat aatatacaac 360

ttgtaaaaat aaaatatctg aataagcatt ataaataaac ccaaagaggt gtttagattta 420

tatacttaat tgtagctact aaatagagaa tcagagagaa tagttttata tcttgcacga 480

aactgcatgc tttttgagac atg gca atc ttc cga agt aca cta gtt tta ctg 533

Met Ala Ile Phe Arg Ser Thr Leu Val Leu Leu
1 5 10

ctg atc ctc ttc tgc ctc acc act ttt gag gttcataact tttgtcttta 583

Leu Ile Leu Phe Cys Leu Thr Thr Phe Glu
15 20

cttctccatg aatcatttgc ttcgtcttat ccttaattca tatgtgtttg atcaatgata 643

ataattcatc attctcttca g ctt cat gtt cat gct gct gaa gat tca caa 694

Leu His Val His Ala Ala Glu Asp Ser Gln
25 30

gtc ggt gaa ggc gta gtg aaa att g gtatgtaacg ctaacatata 739

Val Gly Glu Gly Val Val Lys Ile
35

tgtaaagtgt tatactctctg tttatatatg atttttaaac ggttaaaaac tagtcatatg 799

tgtataaata tatcatgtga ag at tgc ggt ggg aga tgc aaa ggt aga tgc 850

Asp Cys Gly Gly Arg Cys Lys Gly Arg Cys
45

agc aaa tcg tcg agg cca aat ctg tgt ttg aga gca tgc aac agc tgt 898

Ser Lys Ser Ser Arg Pro Asn Leu Cys Leu Arg Ala Cys Asn Ser Cys
50 55 60 65

tgt tac cgc tgc aac tgt gtg cca cca ggc acc gcc ggg aac cac cac 946

Cys Tyr Arg Cys Asn Cys Val Pro Pro Gly Thr Ala Gly Asn His His
70 75 80

ctt tgt cct tgc tac gcc tcc att acc act cgt ggt ggc cgt ctc aag 994

Leu Cys Pro Cys Tyr Ala Ser Ile Thr Thr Arg Gly Gly Arg Leu Lys
Page 21

P59845PC00 sequence listing

85

90

95

tgc cct taaacatata cacatacaga tgtgtgtata tgtcttccgc gagcacacac 1050
Cys Pro

gtacgtttat gttttaagga caatagtatg tatgagcagc tataaacaaa ccagaagtta 1110

atggttcatg ttgaactagt ataagttgta tgaactgtgc ttcttttgaa caaccacttt 1170

tgctgtaagt ttagcaaccc tatttaataa attagagatt acaaaaaaaaa aaatgaaaaa 1230

tgtttaaaaa acgtggattt ttaaatttgg gattaaaaat taattttcat tttggttgat 1290

ttgtcaataa attagctaag ttttgtatac taggccggtt aagatatgct gttaaatttt 1350

tgataataga gttgccttag aagttcataa ctgtaaatat ctaacttcac ttcaatctca 1410

caaacacacg aatcaacttc agcactaaga atcgaattga ccagaactga aagaaagtaa 1470

aagaaaagct gaatacagag aatttaacga 1500

<210> 20

<211> 99

<212> PRT

<213> Arabidopsis thaliana

<400> 20

Met Ala Ile Phe Arg Ser Thr Leu Val Leu Leu Leu Ile Leu Phe Cys
1 5 10 15

Leu Thr Thr Phe Glu Leu His Val His Ala Ala Glu Asp Ser Gln Val
20 25 30

Gly Glu Gly Val Val Lys Ile Asp Cys Gly Gly Arg Cys Lys Gly Arg
35 40 45

Cys Ser Lys Ser Ser Arg Pro Asn Leu Cys Leu Arg Ala Cys Asn Ser
50 55 60

Cys Cys Tyr Arg Cys Asn Cys Val Pro Pro Gly Thr Ala Gly Asn His
65 70 75 80

His Leu Cys Pro Cys Tyr Ala Ser Ile Thr Thr Arg Gly Gly Arg Leu
85 90 95

Lys Cys Pro

<210> 21

<211> 1647

<212> DNA

<213> Arabidopsis thaliana

P59845PC00 sequence listing

```
<220>
<221> CDS
<222> (501)..(563)
<223> exon 1
```

```
<220>
<221> CDS
<222> (661)..(715)
<223> exon 2
```

```
<220>
<221> CDS
<222> (966)..(1144)
<223> exon 3
```

[illegible]

P59845PC00 sequence listing

45	50	55	60	
gcg tgc aac agc tgt tgt tcc cgc tgc aac tgt gtg cca cct ggt act				1075
Ala Cys Asn Ser Cys Cys Ser Arg Cys Asn Cys Val Pro Pro Gly Thr	65	70	75	
tct gga aac acc cac ctt tgt cct tgc tac gcc tcc att acc act cac				1123
Ser Gly Asn Thr His Leu Cys Pro Cys Tyr Ala Ser Ile Thr Thr His	80	85	90	
ggt ggc cgc ctc aag tgc cct taaaatttct tctgtgtctg tttctgtttc				1174
Gly Gly Arg Leu Lys Cys Pro	95			
tacttctatt tcgaatatat gtacatgtgt gtgtacgtgt gtatgtatac aagtactgct				1234
atgtttttgga ggacaaaagt atatgtatga gaagctataa actaattaga agttgatggt				1294
tatgcgtatt atcaaaccgt gttacttctg aacaaccaat ttcggtttgt tccaagtttg				1354
gcaaccctaa aataaaaaatt caaaatgatt ggagactact cgtaataaga cattgaaaac				1414
gatgaaatct cgttacgttt ttatatTTTT tgaactgtaa tattattatg cagaagcggg				1474
tttgtaatgg gccgacaaaa aaaaagtggg tttgtaatgg atatgattcg gatctattct				1534
ggaaatgggc tcaaaaaagta gagttgagat ctcaatacga aaatgaaccc tttcgtttga				1594
tttatcaaag ctttttatTT tgaaaacggt aaatcctcac taggatctct ctt				1647
<210>	22			
<211>	99			
<212>	PRT			
<213>	Arabidopsis thaliana			
<400>	22			
Met Ala Val Phe Arg Ser Thr Leu Val Leu Leu Leu Ile Ile Val Cys				
1 5 10 15				
Leu Thr Thr Tyr Glu Leu His Val His Ala Ala Asp Gly Ala Lys Val				
20 25 30				
Gly Glu Gly Val Val Lys Ile Asp Cys Gly Gly Arg Cys Lys Asp Arg				
35 40 45				
Cys Ser Lys Ser Ser Arg Thr Lys Leu Cys Leu Arg Ala Cys Asn Ser				
50 55 60				
Cys Cys Ser Arg Cys Asn Cys Val Pro Pro Gly Thr Ser Gly Asn Thr				
65 70 75 80				
His Leu Cys Pro Cys Tyr Ala Ser Ile Thr Thr His Gly Gly Arg Leu				
85 90 95				
Lys Cys Pro				

P59845PC00 sequence listing

```
<210> 23
<211> 2009
<212> DNA
<213> Arabidopsis thaliana
```

```
<220>
<221> CDS
<222> (501)..(566)
<223> exon 1
```

```
<220>
<221> CDS
<222> (767)..(805)
<223> exon 2
```

```
<220>
<221> CDS
<222> (924)..(957)
<223> exon 3
```

```
<220>
<221> CDS
<222> (1328)..(1506)
<223> exon 4
```

[illegible]

P59845PC00 sequence listing

ttattgaatc gactagtaat taccttttaa actatatattt atacctattg ttatctcgta	875
acttaacgaa aagtgattaa ttagttacct tttttggta attttcag aaa cgt tat	932
	Lys Arg Tyr
gga cca gga agc ctg aaa cgt acc c gtaagttttt tcttcacagc	977
Gly Pro Gly Ser Leu Lys Arg Thr	
40 45	
tattcttaaa caattttttt ttaatctcat aatcgacgaa aaataaacia ttcaagaaat	1037
cttttattgt gttataataa aaaaaataa gcatttcagt tgcagaaaat aagttgaaag	1097
tgaagtgtta agtggactgt ttggtcagat ccgtagactc aaaatatatt agatattgac	1157
gaaattgccc cttaatatgg tcatacagtc aaagcaaccc actatcttga gaccacaaaa	1217
acagtaaaaa aaaaagctaa tgaatttcca ctagattctg ttgtttttat tagtaataaa	1277
aaatttttga gtgttaacat tttgatattg tttgtatttg aaacaaccag aa tgc	1332
	Gln Cys
cca tcg gaa tgt gat agg agg tgt aaa aag aca cag tac cac aag gct	1380
Pro Ser Glu Cys Asp Arg Arg Cys Lys Lys Thr Gln Tyr His Lys Ala	
50 55 60	
tgc att acg ttc tgc aac aaa tgc tgc agg aag tgt ctc tgt gtg cct	1428
Cys Ile Thr Phe Cys Asn Lys Cys Cys Arg Lys Cys Leu Cys Val Pro	
65 70 75 80	
ccg ggt tac tat ggg aac aaa caa gtt tgc tcc tgc tac aac aac tgg	1476
Pro Gly Tyr Tyr Gly Asn Lys Gln Val Cys Ser Cys Tyr Asn Asn Trp	
85 90 95	
aaa act caa gag ggt gga cca aaa tgc cct tgaaaaaatc tcccttcgtt	1526
Lys Thr Gln Glu Gly Gly Pro Lys Cys Pro	
100 105	
ccctttttat aataaaaaatt ttcaactata actaaatttc ctttgatcaa tgttttatct	1586
actttattcc taatgttgta atgttatgtc actccttttc ggattttgtt ctaaatccta	1646
aaaaaatga gagtggccct atgaatgata tttttcatga atacttgtgt ttctaaagat	1706
attttcccat tcatccacca aaaaaaaga tattttccat ttcgaaaata gtaatactat	1766
aaagggtaag gcaaaccaaa taatacaatt taaaaaattc ctgcgaaaga agtatgcata	1826
tgtagaaaag agtgacattg ggtctctcgg ccagacta aaaagcccat tattgatttt	1886
tccaagcttt ttacaaaatc acgtgttcta acgcgattgc tttttgccgc aatcttcttt	1946
tatacaagac ttgggctttg ggcagttgga aataaataac gacaacgata ttttacaatc	2006
ggt	2009

<210> 24
 <211> 106
 <212> PRT

P59845PC00 sequence listing

<213> Arabidopsis thaliana

<400> 24

Met Ala Lys Ser Tyr Gly Ala Ile Phe Leu Leu Thr Leu Ile Val Leu
1 5 10 15

Phe Met Leu Gln Thr Met Val Met Ala Ser Ser Gly Ser Asn Val Lys
20 25 30

Trp Ser Gln Lys Arg Tyr Gly Pro Gly Ser Leu Lys Arg Thr Gln Cys
35 40 45

Pro Ser Glu Cys Asp Arg Arg Cys Lys Lys Thr Gln Tyr His Lys Ala
50 55 60

Cys Ile Thr Phe Cys Asn Lys Cys Cys Arg Lys Cys Leu Cys Val Pro
65 70 75 80

Pro Gly Tyr Tyr Gly Asn Lys Gln Val Cys Ser Cys Tyr Asn Asn Trp
85 90 95

Lys Thr Gln Glu Gly Gly Pro Lys Cys Pro
100 105

<210> 25

<211> 2164

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (501)..(551)

<223> exon 1

<220>

<221> CDS

<222> (680)..(718)

<223> exon 2

<220>

<221> CDS

<222> (839)..(1391)

<223> exon 3

<220>

<221> CDS

<222> (1480)..(1661)

<223> exon 4

<400> 25

ttgctcactg gtgcaataat cgaagtgaag agcctcttta tatgaaatat ataagcgaca 60

cagccttatg ggcaaatcga atgctattta tttattttgat aagaagatta ataatttcaa 120

P59845PC00 sequence listing

tttgtcatcc actagtctct tgggggtactc aaaacatatc accaaaaagt ccatagagtt	180
atttgttctt atttactgat aaagtattcc aagttgatgt acgaataaag tggcaatttc	240
atgtattatc aatataatcc atttttggga atctgatatt ttgtttatcc tcgagctctg	300
agagatatat tttggtgcag tgaagggttca aagctggcat gcatgatgca tataataact	360
gctctggacc taatacttac tacgcattta aattaatatt tatggataat atgggttaata	420
aataaggaac ttctatttat atcacaaaag gtcactggtc ttcttcgtgt gacttcacca	480
ctttctcatc tcccacaaaa atg gct ctc tca ctt ctt tca gtc ttt atc ttt	533
Met Ala Leu Ser Leu Leu Ser Val Phe Ile Phe	
1 5 10	
ttc cat gtc ttt acc aat gtaagttatt cttacttttc ataacaaaag	581
Phe His Val Phe Thr Asn	
15	
gtgttattat gttaaagact acataatagt atacaattat gtgcattacg ttttcgcgta	641
ttgtaactaa ctatgtattt tgattaatca ccgagcag gtt gtt ttt gct gct tca	697
Val Val Phe Ala Ala Ser	
20	
aat gag gaa tcc aac gcc tta gtacgttttc taatttccag tttaattatt	748
Asn Glu Glu Ser Asn Ala Leu	
25 30	
tctatgcgtc tttaactata tactcaggca tttttattga ttattgtgta tgaagttaaa	808
ttttggtata tgtttgtatt aaatttatag gtt tct tta cca acg cca aca ctt	862
Val Ser Leu Pro Thr Pro Thr Leu	
35	
cca tcg cca tct ccg gct acc aaa ccg ccg tcg cca gct ctc aaa ccg	910
Pro Ser Pro Ser Pro Ala Thr Lys Pro Pro Ser Pro Ala Leu Lys Pro	
40 45 50	
ccg acg ccg tcg tac aag cca ccc acg ctg cca act act cct att aaa	958
Pro Thr Pro Ser Tyr Lys Pro Pro Thr Leu Pro Thr Thr Pro Ile Lys	
55 60 65 70	
cca ccc acc aca aaa cct ccg gtc aaa cct cca act att ccg gtt aca	1006
Pro Pro Thr Thr Lys Pro Pro Val Lys Pro Pro Thr Ile Pro Val Thr	
75 80 85	
cca gta aaa cct ccg gtt tca act cct ccg atc aaa cta ccg ccg gta	1054
Pro Val Lys Pro Pro Val Ser Thr Pro Pro Ile Lys Leu Pro Pro Val	
90 95 100	
caa cca cct acg tac aaa ccc cca acg cca aca gtt aaa cca ccg tcc	1102
Gln Pro Pro Thr Tyr Lys Pro Pro Thr Pro Thr Val Lys Pro Pro Ser	
105 110 115	
gtc caa cca cct acg tac aaa ccc cca act cca acg gtt aaa cca ccc	1150
Val Gln Pro Pro Thr Tyr Lys Pro Pro Thr Pro Thr Val Lys Pro Pro	
120 125 130	
act aca tca ccg gtt aaa cca ccc act acg cca cca gtt caa tca ccg	1198
Thr Thr Ser Pro Val Lys Pro Pro Thr Thr Pro Pro Val Gln Ser Pro	
135 140 145 150	

P59845PC00 sequence listing

ccg gtc caa cca cct acg tac aaa ccc cca acg tca ccg gtt aaa cca	1246
Pro Val Gln Pro Pro Thr Tyr Lys Pro Pro Thr Ser Pro Val Lys Pro	
155 160 165	
ccc acc aca act cca ccg gtt aaa ccc ccc acc acg acg cca ccg gtc	1294
Pro Thr Thr Thr Pro Pro Val Lys Pro Pro Thr Thr Thr Pro Pro Val	
170 175 180	
caa cca cct acg tac aat ccc cca act aca ccg gtt aaa cca cct aca	1342
Gln Pro Pro Thr Tyr Asn Pro Pro Thr Thr Pro Val Lys Pro Pro Thr	
185 190 195	
gcg ccg cct gtc aaa cct cca aca cca cct ccc gta aga act cgg ata g	1391
Ala Pro Pro Val Lys Pro Pro Thr Pro Pro Pro Val Arg Thr Arg Ile	
200 205 210	
gtaataataa ttttctttca aaagtgtgat gattatcggg cggttgattag atcggatgta	1451
taattggact aaattttgga cggttttag at tgc gtg cct tta tgt ggg acg	1502
Asp Cys Val Pro Leu Cys Gly Thr	
220	
agg tgt ggg caa cac tcg agg aag aac gta tgt atg aga gcg tgc gtc	1550
Arg Cys Gly Gln His Ser Arg Lys Asn Val Cys Met Arg Ala Cys Val	
225 230 235	
acg tgc tgc tac cgc tgc aag tgt gtt ccc cca ggc acc tac ggt aat	1598
Thr Cys Cys Tyr Arg Cys Lys Cys Val Pro Pro Gly Thr Tyr Gly Asn	
240 245 250	
aag gag aag tgt gga tct tgt tac gcc aac atg aag aca cgt ggt gga	1646
Lys Glu Lys Cys Gly Ser Cys Tyr Ala Asn Met Lys Thr Arg Gly Gly	
255 260 265 270	
aaa tcc aaa tgt cct tgaaccttta tatgacgatg gttgttaaac gaaataattt	1701
Lys Ser Lys Cys Pro	
275	
aaatcaatgg agtttttata agttttgtaat gcgtttgttt ttgttatagt aatattgagt	1761
tggatctttg ttacggggac gtagaataact aaataatgaa aaaaaccttc tcgatgaatt	1821
aagggtttta tgaatttggt ttgtattgaa taatataggg atggataaag ttttattatt	1881
ctaacagggt actttattag gcatttcttc ggctcatgta actcttgat cgctgaaact	1941
atgtaataga tagaagaacc taaaaaaga aagaaaacaa gaaatgcaca tagcgaagct	2001
caaaagatga gtgttctgct agcggtaatg ttgttattca gttgggtcaa atgctcta	2061
tgcaaactct atttgggcct tatatagact cttatgtgca tatgggtccag cctatttggg	2121
ccgatgtgtt tgaagatcat ttgggaaagt cttgcgcaag gag	2164

<210> 26
 <211> 275
 <212> PRT
 <213> Arabidopsis thaliana
 <400> 26

P59845PC00 sequence listing

Met	Ala	Leu	Ser	Leu	Leu	Ser	Val	Phe	Ile	Phe	Phe	His	Val	Phe	Thr
1				5					10					15	
Asn	Val	Val	Phe	Ala	Ala	Ser	Asn	Glu	Glu	Ser	Asn	Ala	Leu	Val	Ser
			20					25					30		
Leu	Pro	Thr	Pro	Thr	Leu	Pro	Ser	Pro	Ser	Pro	Ala	Thr	Lys	Pro	Pro
		35					40					45			
Ser	Pro	Ala	Leu	Lys	Pro	Pro	Thr	Pro	Ser	Tyr	Lys	Pro	Pro	Thr	Leu
	50					55					60				
Pro	Thr	Thr	Pro	Ile	Lys	Pro	Pro	Thr	Thr	Lys	Pro	Pro	Val	Lys	Pro
65					70					75					80
Pro	Thr	Ile	Pro	Val	Thr	Pro	Val	Lys	Pro	Pro	Val	Ser	Thr	Pro	Pro
			85					90						95	
Ile	Lys	Leu	Pro	Pro	Val	Gln	Pro	Pro	Thr	Tyr	Lys	Pro	Pro	Thr	Pro
			100				105						110		
Thr	Val	Lys	Pro	Pro	Ser	Val	Gln	Pro	Pro	Thr	Tyr	Lys	Pro	Pro	Thr
		115					120					125			
Pro	Thr	Val	Lys	Pro	Pro	Thr	Thr	Ser	Pro	Val	Lys	Pro	Pro	Thr	Thr
	130					135					140				
Pro	Pro	Val	Gln	Ser	Pro	Pro	Val	Gln	Pro	Pro	Thr	Tyr	Lys	Pro	Pro
145					150				155						160
Thr	Ser	Pro	Val	Lys	Pro	Pro	Thr	Thr	Thr	Pro	Pro	Val	Lys	Pro	Pro
				165					170					175	
Thr	Thr	Thr	Pro	Pro	Val	Gln	Pro	Pro	Thr	Tyr	Asn	Pro	Pro	Thr	Thr
			180				185						190		
Pro	Val	Lys	Pro	Pro	Thr	Ala	Pro	Pro	Val	Lys	Pro	Pro	Thr	Pro	Pro
		195					200					205			
Pro	Val	Arg	Thr	Arg	Ile	Asp	Cys	Val	Pro	Leu	Cys	Gly	Thr	Arg	Cys
	210					215					220				
Gly	Gln	His	Ser	Arg	Lys	Asn	Val	Cys	Met	Arg	Ala	Cys	Val	Thr	Cys
225					230					235					240
Cys	Tyr	Arg	Cys	Lys	Cys	Val	Pro	Pro	Gly	Thr	Tyr	Gly	Asn	Lys	Glu
				245					250					255	

P59845PC00 sequence listing

Lys Cys Gly Ser Cys Tyr Ala Asn Met Lys Thr Arg Gly Gly Lys Ser
260 265 270

Lys Cys Pro
275

<210> 27
<211> 1366
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (501)..(582)
<223> exon 1

<220>
<221> CDS
<222> (679)..(863)
<223> exon 2

<400> 27
gacttgagta tgaatccaat aacccaaaat ttatgcagat tttagaatac ttcttataaa 60
tcttaaatga ataacacaaa actttaacat acttttaaca aatcttgatt gaataacaac 120
agattctaca tgacatttta aatcactaaa actcttttga aatcataaac caataacaac 180
cccttagttt tttactatct gaattctgac gtactttttt attagttgaa tttctataaa 240
tgagaaaaca ttaattatct cttaatcttt gaacttaagc cccacaaaaa tcttataaat 300
tgggacagat ggactagata acaagcgttt cacctactcc aaaatttccc tataagtaac 360
tcttttttga acctcctttt cttcccaaac catcactcct tttgcattgt gtgaaacctt 420
cgagttttct cttcatcttc tcaaagtaac aaactttctc caaacagatt attattaaaa 480
caatctcatc aagaactacg atg aaa ttc ccg gct gta aaa gtt ctt att atc 533
Met Lys Phe Pro Ala Val Lys Val Leu Ile Ile
1 5 10
tct ctt ctc atc aca tct tct ttg ttc ata ctc tca acc gcg gat tcg t 582
Ser Leu Leu Ile Thr Ser Ser Leu Phe Ile Leu Ser Thr Ala Asp Ser
15 20 25
gtaagtatac acaatgcatt ttcttatctt agatactttt ctcattagaa atttagcttt 642
cttaataaaa ttgtattgtg atgatggatt aattag ca cca tgc gga gga aaa 695
Ser Pro Cys Gly Gly Lys
30
tgc aac gtg aga tgt tca aag gca gga aga caa gat agg tgt ctc aag 743
Cys Asn Val Arg Cys Ser Lys Ala Gly Arg Gln Asp Arg Cys Leu Lys
35 40 45
tat tgt aat ata tgt tgc gag aag tgt aac tat tgt gtt cct tca ggc 791
Tyr Cys Asn Ile Cys Cys Glu Lys Cys Asn Tyr Cys Val Pro Ser Gly
50 55 60 65

P59845PC00 sequence listing

act tat gga aac aaa gat gaa tgc cct tgt tac cgc gat atg aag aac 839
 Thr Tyr Gly Asn Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met Lys Asn
 70 75 80

tcc aaa ggc acg tcc aaa tgt cct tgatcatggt cttaagatta tccttataga 893
 Ser Lys Gly Thr Ser Lys Cys Pro
 85

cacaatatct tgaaatgtta agattgtgct tgatgcctaa aataatgagc ttgagatact 953

tctatgaatg aatatgtgaa agattttgac aataaaatga tttgatgtat taaaatattc 1013

ttagtgaagt tatatatgta taaatgaagt atgaaatata cattgtatgt tgctttacat 1073

gagaaagata aatctacaac aatccaatgt atgaaaattt tactaagtta actgatcaga 1133

aacgttaatt atggttttaga atcttgtgga gagatgatta cttttgtaag agaaattgat 1193

tgtttgttgt caatgaggat aaagtaagaa gccatttctc aacacatgga cttgatagca 1253

aactaaacaa ggctcaagca ttgaaattga aacgtctcga tagataagat tggctcaaga 1313

aaagcaagtg ttttttgttg tagaaaacag aaattgaaat tactgtctac ttt 1366

<210> 28

<211> 89

<212> PRT

<213> Arabidopsis thaliana

<400> 28

Met Lys Phe Pro Ala Val Lys Val Leu Ile Ile Ser Leu Leu Ile Thr
 1 5 10 15

Ser Ser Leu Phe Ile Leu Ser Thr Ala Asp Ser Ser Pro Cys Gly Gly
 20 25 30

Lys Cys Asn Val Arg Cys Ser Lys Ala Gly Arg Gln Asp Arg Cys Leu
 35 40 45

Lys Tyr Cys Asn Ile Cys Cys Glu Lys Cys Asn Tyr Cys Val Pro Ser
 50 55 60

Gly Thr Tyr Gly Asn Lys Asp Glu Cys Pro Cys Tyr Arg Asp Met Lys
 65 70 75 80

Asn Ser Lys Gly Thr Ser Lys Cys Pro
 85

<210> 29

<211> 750

<212> DNA

<213> Arabidopsis thaliana

P59845PC00 sequence listing

```

<220>
<221> CDS
<222> (14)..(85)
<223> exon 1

<220>
<221> CDS
<222> (395)..(631)
<223> exon 2

<400> 29
ctgttttcag aaa atg gca aca aaa ctt agc atc att gtt ttc tcc att 49
          Met Ala Thr Lys Leu Ser Ile Ile Val Phe Ser Ile
          1          5          10

gtt gtg tta cat ctt ctt ctg tct gcc cat atg cat gtaagtgttt 95
Val Val Leu His Leu Leu Leu Ser Ala His Met His
      15          20

caacactcta ttcctctatg ttcacattta tcaactttat cttatacgtc cctgaataaa 155
acacagccta tatacttgga atctcctgct cgacaaccac aaccaccaca gtcgcaacca 215
caactgccgc atcacaataa ctctcaagtg agttttctcg ttcataccta ctcaaaaaaa 275
gagtttcatc gaatctacaa aaccttttta acatcctttg catcttcttg ttgattttgg 335
cagtacggta ctactcaagg cagtcttcaa cccaaggta aaccactga ctagcctag 394

ttt tta att aat gtt tgt gct gaa tgc gaa act aaa tcc gct att cca 442
Phe Leu Ile Asn Val Cys Ala Glu Cys Glu Thr Lys Ser Ala Ile Pro
25          30          35          40

cct tta tta gag tgc ggg cca agg tgt gga gat aga tgc tcg aat aca 490
Pro Leu Leu Glu Cys Gly Pro Arg Cys Gly Asp Arg Cys Ser Asn Thr
          45          50          55

caa tac aag aag ccg tgt ttg ttc ttc tgc aac aaa tgt tgt aac aag 538
Gln Tyr Lys Lys Pro Cys Leu Phe Phe Cys Asn Lys Cys Cys Asn Lys
          60          65          70

tgc ttg tgt gtg ccc cca ggt act tat ggc aat aag caa gta tgt cct 586
Cys Leu Cys Val Pro Pro Gly Thr Tyr Gly Asn Lys Gln Val Cys Pro
          75          80          85

tgc tat aac aac tgg aag acc aag agc ggt gga cca aaa tgc cct 631
Cys Tyr Asn Asn Trp Lys Thr Lys Ser Gly Gly Pro Lys Cys Pro
          90          95          100

tagtttctcc tcttaattac tttagcataa actccatgta atttgttaat ctacctatca 691
taatttatat atgtattgga ctcttcata atcacatcag ttctctgtga ttatgacgt 750

<210> 30
<211> 103
<212> PRT
<213> Arabidopsis thaliana

<400> 30
Met Ala Thr Lys Leu Ser Ile Ile Val Phe Ser Ile Val Val Leu His
1          5          10          15

```

P59845PC00 sequence listing

Leu Leu Leu Ser Ala His Met His Phe Leu Ile Asn Val Cys Ala Glu
20 25 30

Cys Glu Thr Lys Ser Ala Ile Pro Pro Leu Leu Glu Cys Gly Pro Arg
35 40 45

Cys Gly Asp Arg Cys Ser Asn Thr Gln Tyr Lys Lys Pro Cys Leu Phe
50 55 60

Phe Cys Asn Lys Cys Cys Asn Lys Cys Leu Cys Val Pro Pro Gly Thr
65 70 75 80

Tyr Gly Asn Lys Gln Val Cys Pro Cys Tyr Asn Asn Trp Lys Thr Lys
85 90 95

Ser Gly Gly Pro Lys Cys Pro
100

<210> 31
<211> 56
<212> PRT
<213> Arabidopsis thaliana

<220>
<221> PEPTIDE
<222> (1)..(56)
<223> Xaa at position 25 is either R or K
Xaa at position 25 is either P or S
Xaa at position 25 is either N or H
Other Xaa may be any amino acid

<220>
<221> misc_feature
<222> (2)..(2)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (4)..(4)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (7)..(14)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (16)..(18)
<223> Xaa can be any naturally occurring amino acid

P59845PC00 sequence listing

<220>
 <221> misc_feature
 <222> (20)..(21)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (24)..(25)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (27)..(27)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (31)..(31)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (34)..(34)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (36)..(39)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (41)..(41)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (44)..(50)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (52)..(53)
 <223> Xaa can be any naturally occurring amino acid

<400> 31

Cys Xaa Cys Xaa Arg Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa
 1 5 10 15

Xaa Xaa Cys Xaa Xaa Cys Cys Xaa Xaa Cys Xaa Cys Val Pro Xaa Gly
 20 25 30

Thr Xaa Gly Xaa Xaa Xaa Xaa Cys Xaa Cys Tyr Xaa Xaa Xaa Xaa Xaa
 35 40 45

Xaa Xaa Gly Xaa Xaa Lys Cys Pro
 50 55

<210>	32
<211>	832
<212>	DNA
<213>	Arabidopsis thaliana

<220>
<221> CDS
<222> (53) .. (703)

Page 36

P59845PC00 sequence listing

ttt gag aac aac ccg aga ttg gag gga ccg gaa tta ctc ggt ctt gca 682
Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu Gly Leu Ala
195 200 205 210

agc tac gac act aac tgc acc tgaacaactg gcaaaacctg aaaatgaaga 733
Ser Tyr Asp Thr Asn Cys Thr
215

attgggggggt gaccttgtaa gaacacttca ccactttatc aaatatcaca tctactatgt 793

aataagtata tatatgtagt ccaaaaaaaaa aaaaaaaaaa 832

<210> 33

<211> 217

<212> PRT

<213> Arabidopsis thaliana

<400> 33

Met Ala Ser Arg Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser Leu Thr
1 5 10 15

Leu Thr Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu Gly Asp
20 25 30

Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu
35 40 45

Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val
50 55 60

Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser
65 70 75 80

Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu
85 90 95

Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser
100 105 110

Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr Asn Asn
115 120 125

Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys Ser Leu
130 135 140

Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Val Gln Ser Leu Glu
145 150 155 160

His Ser Arg Gln Ser Gln Ala Phe Lys Val Val Thr Ser Gln Ala Met
165 170 175

P59845PC00 sequence listing

Ile Cys Val Asp Asn Pro Thr Asn Gly Pro Phe Ala His Ile Pro Leu
180 185 190

Gln Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu Gly
195 200 205

Leu Ala Ser Tyr Asp Thr Asn Cys Thr
210 215

<210> 34
<211> 988
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (53)..(709)

<400> 34
aaaattactc aaattcctat tagattactc tcttcgacct ccgatagctc ac atg gcg 58
Met Ala
1

tct cga aac tat cgg tgg gag ctc ttc gca gct tcg tta atc cta acc 106
Ser Arg Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser Leu Ile Leu Thr
5 10 15

tta gct ttg att cac ctg gtc gaa gca aac tcc gaa gga gat gct ctt 154
Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu Gly Asp Ala Leu
20 25 30

tac gct ctt cgc cgg agt tta aca gat ccg gac cat gtc ctc cag agc 202
Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu Gln Ser
35 40 45 50

tgg gat cca act ctt gtt aat cct tgt acc tgg ttc cat gtc acc tgt 250
Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val Thr Cys
55 60 65

aac caa gac aac cgc gtc act cgt gtg gat ttg ggg aat tca aac ctc 298
Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser Asn Leu
70 75 80

tct gga cat ctt gcg cct gag ctt ggg aag ctt gaa cat tta cag tat 346
Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu Gln Tyr
85 90 95

cta gag ctc tac aaa aac aac atc caa gga act ata cct tcc gaa ctt 394
Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser Glu Leu
100 105 110

gga aat ctg aag aat ctc atc agc ttg gat ctg tac aac aac aat ctt 442
Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr Asn Asn Asn Leu
115 120 125 130

aca ggg ata gtt ccc act tct ttg gga aaa ttg aag tct ctg gtc ttt 490
Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys Ser Leu Val Phe
135 140 145

P59845PC00 sequence listing

tta cgg ctt aat gac aac cga ttg acg ggg caa tcc cta gag cac tca	538
Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Gln Ser Leu Glu His Ser	
150 155 160	
ctg cca atc cca agc ctt aaa agt tgt gga tgt cta agc aat gat ttg	586
Leu Pro Ile Pro Ser Leu Lys Ser Cys Gly Cys Leu Ser Asn Asp Leu	
165 170 175	
tgt gga aca atc cca aca aac gga cct ttt gct cac att cct tta cag	634
Cys Gly Thr Ile Pro Thr Asn Gly Pro Phe Ala His Ile Pro Leu Gln	
180 185 190	
aac ttt gag aac aac ccg agg ttg gag gga ccg gaa tta ctc ggt ctt	682
Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu Gly Leu	
195 200 205 210	
gca agc tac gac act aac tgc acc tga agaaattggc aaaacctgaa	729
Ala Ser Tyr Asp Thr Asn Cys Thr	
215	
aatgaagaat tggggggggac cttgtaagaa cacttcacca ctttatcaaa tatcacatct	789
actatgtaat aagtatatat atgtagtcca aaaaaaaaaat gaagaatcga atagtaatat	849
catctggtct caattgagaa ctttgaggtc tgtgtatgaa aattaaagat tgtactgtaa	909
tgttcggttg tgggattctg agaagtaaca tttgtattgg tatggtatca agttgttctg	969
ccttgtctgc aaaaaaaaaa	988

<210> 35
 <211> 218
 <212> PRT
 <213> Arabidopsis thaliana

<400> 35

Met Ala Ser Arg Asn Tyr Arg Trp Glu Leu Phe Ala Ala Ser Leu Ile
 1 5 10 15

Leu Thr Leu Ala Leu Ile His Leu Val Glu Ala Asn Ser Glu Gly Asp
 20 25 30

Ala Leu Tyr Ala Leu Arg Arg Ser Leu Thr Asp Pro Asp His Val Leu
 35 40 45

Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val
 50 55 60

Thr Cys Asn Gln Asp Asn Arg Val Thr Arg Val Asp Leu Gly Asn Ser
 65 70 75 80

Asn Leu Ser Gly His Leu Ala Pro Glu Leu Gly Lys Leu Glu His Leu
 85 90 95

P59845PC00 sequence listing

Gln Tyr Leu Glu Leu Tyr Lys Asn Asn Ile Gln Gly Thr Ile Pro Ser
100 105 110

Glu Leu Gly Asn Leu Lys Asn Leu Ile Ser Leu Asp Leu Tyr Asn Asn
115 120 125

Asn Leu Thr Gly Ile Val Pro Thr Ser Leu Gly Lys Leu Lys Ser Leu
130 135 140

Val Phe Leu Arg Leu Asn Asp Asn Arg Leu Thr Gly Gln Ser Leu Glu
145 150 155 160

His Ser Leu Pro Ile Pro Ser Leu Lys Ser Cys Gly Cys Leu Ser Asn
165 170 175

Asp Leu Cys Gly Thr Ile Pro Thr Asn Gly Pro Phe Ala His Ile Pro
180 185 190

Leu Gln Asn Phe Glu Asn Asn Pro Arg Leu Glu Gly Pro Glu Leu Leu
195 200 205

Gly Leu Ala Ser Tyr Asp Thr Asn Cys Thr
210 215

<210> 36

<211> 677

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (21)..(662)

<400> 36

ttctctctcc ggcgaaaacc atg gtg gcg caa aac agt cgg cgg gag ctt cta 53
Met Val Ala Gln Asn Ser Arg Arg Glu Leu Leu
1 5 10

gca gct tcc ctg atc cta act tta gct cta att cgt cta acg gaa gca 101
Ala Ala Ser Leu Ile Leu Thr Leu Ala Leu Ile Arg Leu Thr Glu Ala
15 20 25

aac tcc gaa ggg gac gct ctt cac gcg ctt cgc cgg agc tta tca gat 149
Asn Ser Glu Gly Asp Ala Leu His Ala Leu Arg Arg Ser Leu Ser Asp
30 35 40

cca gac aat gtt gtt cag agt tgg gat cca act ctt gtt aat cct tgt 197
Pro Asp Asn Val Val Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys
45 50 55

act tgg ttt cat gtc act tgt aat caa cac cat caa gtc act cgt ctg 245
Thr Trp Phe His Val Thr Cys Asn Gln His His Gln Val Thr Arg Leu
60 65 70 75

P59845PC00 sequence listing

gat ttg ggg aat tca aac tta tct gga cat cta gta cct gaa ctt ggg Asp Leu Gly Asn Ser Asn Leu Ser Gly His Leu Val Pro Glu Leu Gly 80 85 90	293
aag ctt gaa cat tta caa tat ctt gaa ctc tac aaa aac gag att caa Lys Leu Glu His Leu Gln Tyr Leu Glu Leu Tyr Lys Asn Glu Ile Gln 95 100 105	341
gga act ata cct tct gag ctt gga aat ctg aag agt cta atc agt ttg Gly Thr Ile Pro Ser Glu Leu Gly Asn Leu Lys Ser Leu Ile Ser Leu 110 115 120	389
gat ctg tac aac aac aat ctc acc ggg aaa atc cca tct tct ttg gga Asp Leu Tyr Asn Asn Asn Thr Gly Lys Ile Pro Ser Ser Leu Gly 125 130 135	437
aaa ttg aag cgg ctt aac gaa aac cga ttg acc ggt cct att cct aga Lys Leu Lys Arg Leu Asn Glu Asn Arg Leu Thr Gly Pro Ile Pro Arg 140 145 150 155	485
gaa ctc aca gtt att tca agc ctt aaa gtt gtt gat gtc tca ggg aat Glu Leu Thr Val Ile Ser Ser Leu Lys Val Val Asp Val Ser Gly Asn 160 165 170	533
gat ttg tgt gga aca att cca gta gaa gga cct ttt gaa cac att cct Asp Leu Cys Gly Thr Ile Pro Val Glu Gly Pro Phe Glu His Ile Pro 175 180 185	581
atg caa aac ttt gag aac aac ctg aga ttg gag gga cca gaa cta cta Met Gln Asn Phe Glu Asn Asn Leu Arg Leu Glu Gly Pro Glu Leu Leu 190 195 200	629
ggt ctt gcg agc tat gac acc aat tgc act taa aaagaagttg aagaa Gly Leu Ala Ser Tyr Asp Thr Asn Cys Thr 205 210	677

<210> 37
 <211> 213
 <212> PRT
 <213> Arabidopsis thaliana

<400> 37

Met Val Ala Gln Asn Ser Arg Arg Glu Leu Leu Ala Ala Ser Leu Ile 1 5 10 15
Leu Thr Leu Ala Leu Ile Arg Leu Thr Glu Ala Asn Ser Glu Gly Asp 20 25 30
Ala Leu His Ala Leu Arg Arg Ser Leu Ser Asp Pro Asp Asn Val Val 35 40 45
Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val 50 55 60
Thr Cys Asn Gln His His Gln Val Thr Arg Leu Asp Leu Gly Asn Ser 65 70 75 80

P59845PC00 sequence listing

Asn Leu Ser Gly His Leu Val Pro Glu Leu Gly Lys Leu Glu His Leu
85 90 95

Gln Tyr Leu Glu Leu Tyr Lys Asn Glu Ile Gln Gly Thr Ile Pro Ser
100 105 110

Glu Leu Gly Asn Leu Lys Ser Leu Ile Ser Leu Asp Leu Tyr Asn Asn
115 120 125

Asn Leu Thr Gly Lys Ile Pro Ser Ser Leu Gly Lys Leu Lys Arg Leu
130 135 140

Asn Glu Asn Arg Leu Thr Gly Pro Ile Pro Arg Glu Leu Thr Val Ile
145 150 155 160

Ser Ser Leu Lys Val Val Asp Val Ser Gly Asn Asp Leu Cys Gly Thr
165 170 175

Ile Pro Val Glu Gly Pro Phe Glu His Ile Pro Met Gln Asn Phe Glu
180 185 190

Asn Asn Leu Arg Leu Glu Gly Pro Glu Leu Leu Gly Leu Ala Ser Tyr
195 200 205

Asp Thr Asn Cys Thr
210

<210> 38
<211> 2087
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (193)..(2070)

<400> 38
atattttattt tatttttttac tctttgtttg ttttaatgct aatggggtttt taaaagggtt 60
atcgaaaaaa tgagtgagtt tgtgttgagg ttgtctctgt aaagtgttaa tgggtggtgat 120
tttcggaagt taggggttttc tcggatctga agagatcaaa tcaagattcg aaatttacca 180
ttgttgtttg aa atg gag tcg agt tat gtg gtg ttt atc tta ctt tca ctg 231
Met Glu Ser Ser Tyr Val Val Phe Ile Leu Leu Ser Leu
1 5 10
atc tta ctt ccg aat cat tca ctg tgg ctt gct tct gct aat ttg gaa 279
Ile Leu Leu Pro Asn His Ser Leu Trp Leu Ala Ser Ala Asn Leu Glu
15 20 25
ggg gat gct ttg cat act ttg agg gtt act cta gtt gat cca aac aat 327
Page 42

P59845PC00 sequence listing

Gly 30	Asp	Ala	Leu	His	Thr 35	Leu	Arg	Val	Thr	Leu 40	Val	Asp	Pro	Asn	Asn 45	
gtc	ttg	cag	agc	tgg	gat	cct	acg	cta	gtg	aat	cct	tgc	aca	tgg	ttc	375
Val	Leu	Gln	Ser	Trp	Asp	Pro	Thr	Leu	Val	Asn	Pro	Cys	Thr	Trp	Phe	
				50					55					60		
cat	gtc	act	tgc	aac	aac	gag	aac	agt	gtc	ata	aga	gtt	gat	ttg	ggg	423
His	Val	Thr	Cys	Asn	Asn	Glu	Asn	Ser	Val	Ile	Arg	Val	Asp	Leu	Gly	
			65					70					75			
aat	gca	gag	tta	tct	ggc	cat	tta	gtt	cca	gag	ctt	ggt	gtg	ctc	aag	471
Asn	Ala	Glu	Leu	Ser	Gly	His	Leu	Val	Pro	Glu	Leu	Gly	Val	Leu	Lys	
		80					85					90				
aat	ttg	cag	tat	ttg	gag	ctt	tac	agt	aac	aac	ata	act	ggc	ccg	att	519
Asn	Leu	Gln	Tyr	Leu	Glu	Leu	Tyr	Ser	Asn	Asn	Ile	Thr	Gly	Pro	Ile	
	95					100					105					
cct	agt	aat	ctt	gga	aat	ctg	aca	aac	tta	gtg	agt	ttg	gat	ctt	tac	567
Pro	Ser	Asn	Leu	Gly	Asn	Leu	Thr	Asn	Leu	Val	Ser	Leu	Asp	Leu	Tyr	
110				115						120					125	
tta	aac	agc	ttc	tcc	ggt	cct	att	ccg	gaa	tca	ttg	gga	aag	ctt	tca	615
Leu	Asn	Ser	Phe	Ser	Gly	Pro	Ile	Pro	Glu	Ser	Leu	Gly	Lys	Leu	Ser	
				130					135					140		
aag	ctg	aga	ttt	ctc	cgg	ctt	aac	aac	aac	agt	ctc	act	ggg	tca	att	663
Lys	Leu	Arg	Phe	Leu	Arg	Leu	Asn	Asn	Asn	Ser	Leu	Thr	Gly	Ser	Ile	
			145					150					155			
cct	atg	tca	ctg	acc	aat	att	act	acc	ctt	caa	gtg	tta	gat	cta	tca	711
Pro	Met	Ser	Leu	Thr	Asn	Ile	Thr	Thr	Leu	Gln	Val	Leu	Asp	Leu	Ser	
		160				165						170				
aat	aac	aga	ctc	tct	ggt	tca	gtt	cct	gac	aat	ggc	tcc	ttc	tca	ctc	759
Asn	Asn	Arg	Leu	Ser	Gly	Ser	Val	Pro	Asp	Asn	Gly	Ser	Phe	Ser	Leu	
		175				180					185					
ttc	aca	ccc	atc	agt	ttt	gct	aat	aac	tta	gac	cta	tgt	gga	cct	gtt	807
Phe	Thr	Pro	Ile	Ser	Phe	Ala	Asn	Asn	Leu	Asp	Leu	Cys	Gly	Pro	Val	
190				195						200					205	
aca	agt	cac	cca	tgt	cct	gga	tct	ccc	ccg	ttt	tct	cct	cca	cca	cct	855
Thr	Ser	His	Pro	Cys	Pro	Gly	Ser	Pro	Pro	Phe	Ser	Pro	Pro	Pro	Pro	
				210					215					220		
ttt	att	caa	cct	ccc	cca	gtt	tcc	acc	ccg	agt	ggg	tat	ggt	ata	act	903
Phe	Ile	Gln	Pro	Pro	Pro	Val	Ser	Thr	Pro	Ser	Gly	Tyr	Gly	Ile	Thr	
			225					230					235			
gga	gca	ata	gct	ggt	gga	gtt	gct	gca	ggt	gct	gct	ttg	ccc	ttt	gct	951
Gly	Ala	Ile	Ala	Gly	Gly	Val	Ala	Ala	Gly	Ala	Ala	Leu	Pro	Phe	Ala	
		240				245						250				
gct	cct	gca	ata	gcc	ttt	gct	tgg	tgg	cga	cga	aga	agc	cca	cta	gat	999
Ala	Pro	Ala	Ile	Ala	Phe	Ala	Trp	Trp	Arg	Arg	Arg	Ser	Pro	Leu	Asp	
	255					260					265					
att	ttc	ttc	gat	gtc	cct	gcc	gaa	gaa	gat	cca	gaa	gtt	cat	ctg	gga	1047
Ile	Phe	Phe	Asp	Val	Pro	Ala	Glu	Glu	Asp	Pro	Glu	Val	His	Leu	Gly	
270					275					280					285	

P59845PC00 sequence listing

cag ctc aag agg ttt tct ttg cgg gag cta caa gtg gcg agt gat ggg Gln Leu Lys Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Ser Asp Gly 290 295 300	1095
ttt agt aac aag aac att ttg ggc aga ggt ggg ttt ggg aaa gtc tac Phe Ser Asn Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr 305 310 315	1143
aag gga cgc ttg gca gac gga act ctt gtt gct gtc aag aga ctg aag Lys Gly Arg Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys 320 325 330	1191
gaa gag cga act cca ggt gga gag ctc cag ttt caa aca gaa gta gag Glu Glu Arg Thr Pro Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu 335 340 345	1239
atg ata agt atg gca gtt cat cga aac ctg ttg aga tta cga ggt ttc Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe 350 355 360 365	1287
tgt atg aca ccg acc gag aga ttg ctt gtg tat cct tac atg gcc aat Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn 370 375 380	1335
gga agt gtt gct tcg tgt ctc aga gag agg cca ccg tca caa cct ccg Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Pro Ser Gln Pro Pro 385 390 395	1383
ctt gat tgg cca acg cgg aag aga atc gcg cta ggc tca gct cga ggt Leu Asp Trp Pro Thr Arg Lys Arg Ile Ala Leu Gly Ser Ala Arg Gly 400 405 410	1431
ttg tct tac cta cat gat cac tgc gat ccg aag atc att cac cgt gac Leu Ser Tyr Leu His Asp His Cys Asp Pro Lys Ile Ile His Arg Asp 415 420 425	1479
gta aaa gca gca aac atc ctc tta gac gaa gaa ttc gaa gcg gtt gtt Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val 430 435 440 445	1527
gga gat ttc ggg ttg gca aag ctt atg gac tat aaa gac act cac gtg Gly Asp Phe Gly Leu Ala Lys Leu Met Asp Tyr Lys Asp Thr His Val 450 455 460	1575
aca aca gca gtc cgt ggc acc atc ggt cac atc gct cca gaa tat ctc Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu 465 470 475	1623
tca acc gga aaa tct tca gag aaa acc gac gtt ttc gga tac gga atc Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Ile 480 485 490	1671
atg ctt cta gaa cta atc aca gga caa aga gct ttc gat ctc gct cgg Met Leu Leu Glu Leu Ile Thr Gly Gln Arg Ala Phe Asp Leu Ala Arg 495 500 505	1719
cta gct aac gac gac gac gtc atg tta ctt gac tgg gtg aaa gga ttg Leu Ala Asn Asp Asp Asp Val Met Leu Leu Asp Trp Val Lys Gly Leu 510 515 520 525	1767
ttg aag gag aag aag cta gag atg tta gtg gat cca gat ctt caa aca Leu Lys Glu Lys Lys Leu Glu Met Leu Val Asp Pro Asp Leu Gln Thr 530 535 540	1815

P59845PC00 sequence listing

aac tac gag gag aga gaa ctg gaa caa gtg ata caa gtg gcg ttg cta 1863
Asn Tyr Glu Glu Arg Glu Leu Glu Gln Val Ile Gln Val Ala Leu Leu
545 550 555

tgc acg caa gga tca cca atg gaa aga cca aag atg tct gaa gtt gta 1911
Cys Thr Gln Gly Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val Val
560 565 570

agg atg ctg gaa gga gat ggg ctt gcg gag aaa tgg gac gaa tgg caa 1959
Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Lys Trp Asp Glu Trp Gln
575 580 585

aaa gtt gag att ttg agg gaa gag att gat ttg agt cct aat cct aac 2007
Lys Val Glu Ile Leu Arg Glu Glu Ile Asp Leu Ser Pro Asn Pro Asn
590 595 600 605

tct gat tgg att ctt gat tct act tac aat ttg cac gcc gtt gag tta 2055
Ser Asp Trp Ile Leu Asp Ser Thr Tyr Asn Leu His Ala Val Glu Leu
610 615 620

tct ggt cca agg taa aaaaaaaaaa aaaaaaaaaa 2087
Ser Gly Pro Arg
625

<210> 39
<211> 625
<212> PRT
<213> Arabidopsis thaliana

<400> 39

Met Glu Ser Ser Tyr Val Val Phe Ile Leu Leu Ser Leu Ile Leu Leu
1 5 10 15

Pro Asn His Ser Leu Trp Leu Ala Ser Ala Asn Leu Glu Gly Asp Ala
20 25 30

Leu His Thr Leu Arg Val Thr Leu Val Asp Pro Asn Asn Val Leu Gln
35 40 45

Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe His Val Thr
50 55 60

Cys Asn Asn Glu Asn Ser Val Ile Arg Val Asp Leu Gly Asn Ala Glu
65 70 75 80

Leu Ser Gly His Leu Val Pro Glu Leu Gly Val Leu Lys Asn Leu Gln
85 90 95

Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Pro Ile Pro Ser Asn
100 105 110

Leu Gly Asn Leu Thr Asn Leu Val Ser Leu Asp Leu Tyr Leu Asn Ser
115 120 125

P59845PC00 sequence listing

Phe Ser Gly Pro Ile Pro Glu Ser Leu Gly Lys Leu Ser Lys Leu Arg
 130 135 140
 Phe Leu Arg Leu Asn Asn Asn Ser Leu Thr Gly Ser Ile Pro Met Ser
 145 150 155 160
 Leu Thr Asn Ile Thr Thr Leu Gln Val Leu Asp Leu Ser Asn Asn Arg
 165 170 175
 Leu Ser Gly Ser Val Pro Asp Asn Gly Ser Phe Ser Leu Phe Thr Pro
 180 185 190
 Ile Ser Phe Ala Asn Asn Leu Asp Leu Cys Gly Pro Val Thr Ser His
 195 200 205
 Pro Cys Pro Gly Ser Pro Pro Phe Ser Pro Pro Pro Phe Ile Gln
 210 215 220
 Pro Pro Pro Val Ser Thr Pro Ser Gly Tyr Gly Ile Thr Gly Ala Ile
 225 230 235 240
 Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Pro Phe Ala Ala Pro Ala
 245 250 255
 Ile Ala Phe Ala Trp Trp Arg Arg Arg Ser Pro Leu Asp Ile Phe Phe
 260 265 270
 Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly Gln Leu Lys
 275 280 285
 Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Ser Asp Gly Phe Ser Asn
 290 295 300
 Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr Lys Gly Arg
 305 310 315 320
 Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys Glu Glu Arg
 325 330 335
 Thr Pro Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu Met Ile Ser
 340 345 350
 Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe Cys Met Thr
 355 360 365
 Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn Gly Ser Val

P59845PC00 sequence listing

370

375

380

Ala Ser Cys Leu Arg Glu Arg Pro Pro Ser Gln Pro Pro Leu Asp Trp
385 390 395 400

Pro Thr Arg Lys Arg Ile Ala Leu Gly Ser Ala Arg Gly Leu Ser Tyr
405 410 415

Leu His Asp His Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala
420 425 430

Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val Gly Asp Phe
435 440 445

Gly Leu Ala Lys Leu Met Asp Tyr Lys Asp Thr His Val Thr Thr Ala
450 455 460

Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly
465 470 475 480

Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Ile Met Leu Leu
485 490 495

Glu Leu Ile Thr Gly Gln Arg Ala Phe Asp Leu Ala Arg Leu Ala Asn
500 505 510

Asp Asp Asp Val Met Leu Leu Asp Trp Val Lys Gly Leu Leu Lys Glu
515 520 525

Lys Lys Leu Glu Met Leu Val Asp Pro Asp Leu Gln Thr Asn Tyr Glu
530 535 540

Glu Arg Glu Leu Glu Gln Val Ile Gln Val Ala Leu Leu Cys Thr Gln
545 550 555 560

Gly Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val Val Arg Met Leu
565 570 575

Glu Gly Asp Gly Leu Ala Glu Lys Trp Asp Glu Trp Gln Lys Val Glu
580 585 590

Ile Leu Arg Glu Glu Ile Asp Leu Ser Pro Asn Pro Asn Ser Asp Trp
595 600 605

Ile Leu Asp Ser Thr Tyr Asn Leu His Ala Val Glu Leu Ser Gly Pro
610 615 620

P59845PC00 sequence listing

Arg
625

<210> 40
<211> 1950
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (28)..(1926)

<400> 40
ccaaagtga ttgctttaag aagggat atg gaa ggt gtg aga ttt gtg gtg tgg 54
Met Glu Gly Val Arg Phe Val Val Trp
1 5

aga tta gga ttt ctg gtt ttt gta tgg ttc ttt gat atc tct tct gct 102
Arg Leu Gly Phe Leu Val Phe Val Trp Phe Phe Asp Ile Ser Ser Ala
10 15 20 25

aca ctt tct cct act ggt gta aac tat gaa gtg aca gct ttg gtt gct 150
Thr Leu Ser Pro Thr Gly Val Asn Tyr Glu Val Thr Ala Leu Val Ala
30 35 40

gtg aag aat gaa ttg aat gat ccg tac aaa gtt ctt gag aat tgg gat 198
Val Lys Asn Glu Leu Asn Asp Pro Tyr Lys Val Leu Glu Asn Trp Asp
45 50 55

gtg aat tca gtt gat cct tgt agc tgg aga atg gtt tct tgc act gat 246
Val Asn Ser Val Asp Pro Cys Ser Trp Arg Met Val Ser Cys Thr Asp
60 65 70

ggc tat gtc tct tca ctg gat ctt cct agc caa agc ttg tct ggt aca 294
Gly Tyr Val Ser Ser Leu Asp Leu Pro Ser Gln Ser Leu Ser Gly Thr
75 80 85

ttg tct cct aga atc gga aac ctc acc tat tta caa tca gtg gtg ttg 342
Leu Ser Pro Arg Ile Gly Asn Leu Thr Tyr Leu Gln Ser Val Val Leu
90 95 100 105

caa aac aat gca atc act ggt cca att ccg gaa acg att ggg agg ttg 390
Gln Asn Asn Ala Ile Thr Gly Pro Ile Pro Glu Thr Ile Gly Arg Leu
110 115 120

gag aag ctt cag tca ctt gat ctt tcg aac aat tca ttc acc ggg gag 438
Glu Lys Leu Gln Ser Leu Asp Leu Ser Asn Asn Ser Phe Thr Gly Glu
125 130 135

ata ccg gcc tca ctt gga gaa ctc aag aac ttg aat tac ttg cgg tta 486
Ile Pro Ala Ser Leu Gly Glu Leu Lys Asn Leu Asn Tyr Leu Arg Leu
140 145 150

aac aat aac agt ctt ata gga act tgc cct gag tct cta tcc aag att 534
Asn Asn Asn Ser Leu Ile Gly Thr Cys Pro Glu Ser Leu Ser Lys Ile
155 160 165

gag gga ctc act cta gtc gac att tcg tat aac aat ctt agt ggt tcg 582
Glu Gly Leu Thr Leu Val Asp Ile Ser Tyr Asn Asn Leu Ser Gly Ser
170 175 180 185

P59845PC00 sequence listing

ctg cca aaa gtt tct gcc aga act ttc aag gta att ggt aat gcg tta	630
Leu Pro Lys Val Ser Ala Arg Thr Phe Lys Val Ile Gly Asn Ala Leu	
190 195 200	
atc tgt ggc cca aaa gct gtt tca aac tgt tct gct gtt ccc gag cct	678
Ile Cys Gly Pro Lys Ala Val Ser Asn Cys Ser Ala Val Pro Glu Pro	
205 210 215	
ctc acg ctt cca caa gat ggt cca gat gaa tca gga act cgt acc aat	726
Leu Thr Leu Pro Gln Asp Gly Pro Asp Glu Ser Gly Thr Arg Thr Asn	
220 225 230	
ggc cat cac gtt gct ctt gca ttt gcc gca agc ttc agt gca gca ttt	774
Gly His His Val Ala Leu Ala Phe Ala Ala Ser Phe Ser Ala Ala Phe	
235 240 245	
ttt gtt ttc ttt aca agc gga atg ttt ctt tgg tgg aga tat cgc cgt	822
Phe Val Phe Phe Thr Ser Gly Met Phe Leu Trp Trp Arg Tyr Arg Arg	
250 255 260 265	
aac aag caa ata ttt ttt gac gtt aat gaa caa tat gat cca gaa gtg	870
Asn Lys Gln Ile Phe Phe Asp Val Asn Glu Gln Tyr Asp Pro Glu Val	
270 275 280	
agt tta ggg cac ttg aag agg tat aca ttc aaa gag ctt aga tct gcc	918
Ser Leu Gly His Leu Lys Arg Tyr Thr Phe Lys Glu Leu Arg Ser Ala	
285 290 295	
acc aat cat ttc aac tcg aag aac att ctc gga aga ggc gga tac ggg	966
Thr Asn His Phe Asn Ser Lys Asn Ile Leu Gly Arg Gly Gly Tyr Gly	
300 305 310	
att gtg tac aaa gga cac tta aac gat gga act ttg gtg gct gtc aaa	1014
Ile Val Tyr Lys Gly His Leu Asn Asp Gly Thr Leu Val Ala Val Lys	
315 320 325	
cgt ctc aag gac tgt aac att gcg ggt gga gaa gtc cag ttt cag aca	1062
Arg Leu Lys Asp Cys Asn Ile Ala Gly Gly Glu Val Gln Phe Gln Thr	
330 335 340 345	
gaa gta gag act ata agt ttg gct ctt cat cgc aat ctc ctc cgg ctc	1110
Glu Val Glu Thr Ile Ser Leu Ala Leu His Arg Asn Leu Leu Arg Leu	
350 355 360	
cgc ggt ttc tgt agt agc aac cag gag aga att tta gtc tac cct tac	1158
Arg Gly Phe Cys Ser Ser Asn Gln Glu Arg Ile Leu Val Tyr Pro Tyr	
365 370 375	
atg cca aat ggg agt gtc gca tca cgc tta aaa gat aat atc cgt gga	1206
Met Pro Asn Gly Ser Val Ala Ser Arg Leu Lys Asp Asn Ile Arg Gly	
380 385 390	
gag cca gca tta gac tgg tcg aga agg aag aag ata gcg gtt ggg aca	1254
Glu Pro Ala Leu Asp Trp Ser Arg Arg Lys Lys Ile Ala Val Gly Thr	
395 400 405	
gcg aga gga cta gtt tac cta cac gag caa tgt gac ccg aag att ata	1302
Ala Arg Gly Leu Val Tyr Leu His Glu Gln Cys Asp Pro Lys Ile Ile	
410 415 420 425	
cac cgc gat gtg aaa gca gct aac att ctg tta gat gag gac ttc gaa	1350
His Arg Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Asp Phe Glu	
430 435 440	

P59845PC00 sequence listing

gca gtt gtt ggt gat ttt ggg tta gct aag ctt cta gac cat aga gac Ala Val Val Gly Asp Phe Gly Leu Ala Lys Leu Leu Asp His Arg Asp 445 450 455	1398
tct cat gtc aca act gca gtc cgt gga act gtt ggc cac att gca cct Ser His Val Thr Thr Ala Val Arg Gly Thr Val Gly His Ile Ala Pro 460 465 470	1446
gag tac tta tcc acg ggt cag tcc tca gag aag act gat gtc ttt ggc Glu Tyr Leu Ser Thr Gly Gln Ser Ser Glu Lys Thr Asp Val Phe Gly 475 480 485	1494
ttt ggc ata ctt ctc ctt gag ctc att act ggt cag aaa gct ctt gat Phe Gly Ile Leu Leu Leu Glu Leu Ile Thr Gly Gln Lys Ala Leu Asp 490 495 500 505	1542
ttt ggc aga tcc gca cac cag aaa ggt gta atg ctt gac tgg gtg aag Phe Gly Arg Ser Ala His Gln Lys Gly Val Met Leu Asp Trp Val Lys 510 515 520	1590
aag ctg cac caa gaa ggg aaa cta aag cag tta ata gac aaa gat cta Lys Leu His Gln Glu Gly Lys Leu Lys Gln Leu Ile Asp Lys Asp Leu 525 530 535	1638
aat gac aag ttc gat aga gta gaa ctc gaa gaa atc gtt caa gtt gcg Asn Asp Lys Phe Asp Arg Val Glu Leu Glu Glu Ile Val Gln Val Ala 540 545 550	1686
cta ctc tgc act caa ttc aat cca tct cat cga ccg aaa atg tca gaa Leu Leu Cys Thr Gln Phe Asn Pro Ser His Arg Pro Lys Met Ser Glu 555 560 565	1734
gtt atg aag atg ctt gaa ggt gac ggt ttg gct gag aga tgg gaa gcg Val Met Lys Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Glu Ala 570 575 580 585	1782
acg cag aac ggt act ggt gag cat cag cca ccg cca ttg cca ccg ggg Thr Gln Asn Gly Thr Gly Glu His Gln Pro Pro Pro Leu Pro Pro Gly 590 595 600	1830
atg gtg agt tct tcg ccg cgt gtg agg tat tac tcg gat tat att cag Met Val Ser Ser Ser Pro Arg Val Arg Tyr Tyr Ser Asp Tyr Ile Gln 605 610 615	1878
gaa tcg tct ctt gta gta gaa gcc att gag ctc tcg ggt cct cga tga Glu Ser Ser Leu Val Val Glu Ala Ile Glu Leu Ser Gly Pro Arg 620 625 630	1926
ttatgactca ctgtttttaa aaaa	1950

<210> 41
 <211> 632
 <212> PRT
 <213> Arabidopsis thaliana

<400> 41

Met	Glu	Gly	Val	Arg	Phe	Val	Val	Trp	Arg	Leu	Gly	Phe	Leu	Val	Phe
1				5				10						15	

P59845PC00 sequence listing

Val Trp Phe Phe Asp Ile Ser Ser Ala Thr Leu Ser Pro Thr Gly Val
20 25 30

Asn Tyr Glu Val Thr Ala Leu Val Ala Val Lys Asn Glu Leu Asn Asp
35 40 45

Pro Tyr Lys Val Leu Glu Asn Trp Asp Val Asn Ser Val Asp Pro Cys
50 55 60

Ser Trp Arg Met Val Ser Cys Thr Asp Gly Tyr Val Ser Ser Leu Asp
65 70 75 80

Leu Pro Ser Gln Ser Leu Ser Gly Thr Leu Ser Pro Arg Ile Gly Asn
85 90 95

Leu Thr Tyr Leu Gln Ser Val Val Leu Gln Asn Asn Ala Ile Thr Gly
100 105 110

Pro Ile Pro Glu Thr Ile Gly Arg Leu Glu Lys Leu Gln Ser Leu Asp
115 120 125

Leu Ser Asn Asn Ser Phe Thr Gly Glu Ile Pro Ala Ser Leu Gly Glu
130 135 140

Leu Lys Asn Leu Asn Tyr Leu Arg Leu Asn Asn Asn Ser Leu Ile Gly
145 150 155 160

Thr Cys Pro Glu Ser Leu Ser Lys Ile Glu Gly Leu Thr Leu Val Asp
165 170 175

Ile Ser Tyr Asn Asn Leu Ser Gly Ser Leu Pro Lys Val Ser Ala Arg
180 185 190

Thr Phe Lys Val Ile Gly Asn Ala Leu Ile Cys Gly Pro Lys Ala Val
195 200 205

Ser Asn Cys Ser Ala Val Pro Glu Pro Leu Thr Leu Pro Gln Asp Gly
210 215 220

Pro Asp Glu Ser Gly Thr Arg Thr Asn Gly His His Val Ala Leu Ala
225 230 235 240

Phe Ala Ala Ser Phe Ser Ala Ala Phe Phe Val Phe Phe Thr Ser Gly
245 250 255

Met Phe Leu Trp Trp Arg Tyr Arg Arg Asn Lys Gln Ile Phe Phe Asp
260 265 270

P59845PC00 sequence listing

Val Asn Glu Gln Tyr Asp Pro Glu Val Ser Leu Gly His Leu Lys Arg
275 280 285

Tyr Thr Phe Lys Glu Leu Arg Ser Ala Thr Asn His Phe Asn Ser Lys
290 295 300

Asn Ile Leu Gly Arg Gly Gly Tyr Gly Ile Val Tyr Lys Gly His Leu
305 310 315 320

Asn Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys Asp Cys Asn Ile
325 330 335

Ala Gly Gly Glu Val Gln Phe Gln Thr Glu Val Glu Thr Ile Ser Leu
340 345 350

Ala Leu His Arg Asn Leu Leu Arg Leu Arg Gly Phe Cys Ser Ser Asn
355 360 365

Gln Glu Arg Ile Leu Val Tyr Pro Tyr Met Pro Asn Gly Ser Val Ala
370 375 380

Ser Arg Leu Lys Asp Asn Ile Arg Gly Glu Pro Ala Leu Asp Trp Ser
385 390 395 400

Arg Arg Lys Lys Ile Ala Val Gly Thr Ala Arg Gly Leu Val Tyr Leu
405 410 415

His Glu Gln Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala
420 425 430

Asn Ile Leu Leu Asp Glu Asp Phe Glu Ala Val Val Gly Asp Phe Gly
435 440 445

Leu Ala Lys Leu Leu Asp His Arg Asp Ser His Val Thr Thr Ala Val
450 455 460

Arg Gly Thr Val Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Gln
465 470 475 480

Ser Ser Glu Lys Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu Glu
485 490 495

Leu Ile Thr Gly Gln Lys Ala Leu Asp Phe Gly Arg Ser Ala His Gln
500 505 510

Lys Gly Val Met Leu Asp Trp Val Lys Lys Leu His Gln Glu Gly Lys
515 520 525

P59845PC00 sequence listing

Leu Lys Gln Leu Ile Asp Lys Asp Leu Asn Asp Lys Phe Asp Arg Val
530 535 540

Glu Leu Glu Glu Ile Val Gln Val Ala Leu Leu Cys Thr Gln Phe Asn
545 550 555 560

Pro Ser His Arg Pro Lys Met Ser Glu Val Met Lys Met Leu Glu Gly
565 570 575

Asp Gly Leu Ala Glu Arg Trp Glu Ala Thr Gln Asn Gly Thr Gly Glu
580 585 590

His Gln Pro Pro Pro Leu Pro Pro Gly Met Val Ser Ser Ser Pro Arg
595 600 605

Val Arg Tyr Tyr Ser Asp Tyr Ile Gln Glu Ser Ser Leu Val Val Glu
610 615 620

Ala Ile Glu Leu Ser Gly Pro Arg
625 630

<210> 42
<211> 1891
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (25)..(1881)

<400> 42
tcaatttttg tagctcttag aaaa atg gct ctg ctt att atc act gcc tta 51
Met Ala Leu Leu Ile Ile Thr Ala Leu
1 5

gtt ttt agt agt tta tgg tca tct gtg tca cca gat gct caa ggg gat 99
Val Phe Ser Ser Leu Trp Ser Ser Val Ser Pro Asp Ala Gln Gly Asp
10 15 20 25

gca tta ttt gcg ttg agg agc tcg tta cgt gca tct cct gaa cag ctt 147
Ala Leu Phe Ala Leu Arg Ser Ser Leu Arg Ala Ser Pro Glu Gln Leu
30 35 40

agt gat tgg aac cag aat caa gtc gat cct tgt act tgg tct caa gtt 195
Ser Asp Trp Asn Gln Asn Gln Val Asp Pro Cys Thr Trp Ser Gln Val
45 50 55

att tgt gat gac aag aaa cat gtt act tct gta acc ttg tct tac atg 243
Ile Cys Asp Asp Lys Lys His Val Thr Ser Val Thr Leu Ser Tyr Met
60 65 70

aac ttc tcc tcg gga aca ctg tct tca gga ata gga atc ttg aca act 291
Asn Phe Ser Ser Gly Thr Leu Ser Ser Gly Ile Gly Ile Leu Thr Thr
Page 53

P59845PC00 sequence listing

75	80	85	
ctc aag act ctt aca ttg aag gga aat gga ata atg ggt gga ata cca Leu Lys Thr Leu Thr Leu Lys Gly Asn Gly Ile Met Gly Gly Ile Pro 90 95 100 105			339
gaa tcc att gga aat ctg tct agc ttg acc agc tta gat ttg gag gat Glu Ser Ile Gly Asn 110 Leu Ser Ser Leu 115 Ser Leu Asp Leu 120 Glu Asp			387
aat cac tta act gat cgc att cca tcc act ctc ggt aat ctc aag aat Asn His Leu Thr Asp Arg Ile Pro Ser Thr Leu Gly Asn 135 Leu Lys Asn			435
cta cag ttc ttc agg acc ttg agt agg aat aac ctt aat ggt tct atc Leu Gln Phe Phe Arg Thr Leu Ser Arg Asn Asn Leu Asn Gly Ser Ile 140 145 150			483
ccg gat tca ctt aca ggt cta tca aaa ctg ata aat att ctg ctc gac Pro Asp 155 Ser Leu Thr Gly Leu 160 Ser Lys Leu Ile Asn 165 Ile Leu Leu Asp			531
tca aat aat ctc agt ggt gag att cct cag agt tta ttc aaa atc cca Ser Asn Asn Leu Ser Gly Glu Ile Pro Gln Ser Leu Phe Lys Ile Pro 170 175 180 185			579
aaa tac aat ttc aca gca aac aac ttg agc tgt ggt ggc act ttc ccg Lys Tyr Asn Phe Thr Ala Asn Asn Leu Ser Cys Gly Gly Thr Phe Pro 190 195 200			627
caa cct tgt gta acc gag tcc agt cct tca ggt gat tca agc agt aga Gln Pro Cys Val Thr Glu Ser Ser Pro 210 Ser Gly Asp Ser 215 Ser Arg			675
aaa act gga atc atc gct gga gtt gtt agc gga ata gcg gtt att cta Lys Thr Gly Ile Ile Ala Gly Val Val Ser Gly Ile Ala Val Ile Leu 220 225 230			723
cta gga ttc ttc ttc ttt ttc ttc tgc aag gat aaa cat aaa gga tat Leu Gly Phe Phe Phe Phe Phe Phe Cys Lys Asp Lys His Lys Gly Tyr 235 240 245			771
aaa cga gac gta ttt gtg gat gtt gca gga acg aac ttt aaa aaa ggt Lys Arg Asp Val Phe Val Asp Val Ala Gly Thr Asn Phe Lys Lys Gly 250 255 260 265			819
ttg att tca ggt gaa gtg gac aga agg att gct ttt gga cag ttg aga Leu Ile Ser Gly Glu Val Asp Arg Arg Ile Ala Phe Gly Gln Leu Arg 270 275 280			867
aga ttt gca tgg aga gag ctt cag ttg gct aca gat gag ttc agt gaa Arg Phe Ala Trp Arg Glu Leu Gln Leu Ala Thr Asp Glu Phe Ser Glu 285 290 295			915
aag aat gtt ctc gga caa gga ggc ttt ggg aaa gtt tac aaa gga ttg Lys Asn Val Leu Gly Gln Gly Gly Phe Gly Lys Val Tyr Lys Gly Leu 300 305 310			963
ctt tcg gat ggc acc aaa gtc gct gta aaa aga ttg act gat ttt gaa Leu Ser Asp Gly Thr Lys Val Ala Val Lys Arg Leu Thr Asp Phe Glu 315 320 325			1011
cgt cca gga gga gat gaa gct ttc cag aga gaa gtt gag atg ata agt			1059

P59845PC00 sequence listing

Arg 330	Pro	Gly	Gly	Asp	Glu 335	Ala	Phe	Gln	Arg	Glu 340	Val	Glu	Met	Ile	Ser 345	
gta Val	gct Ala	gtt Val	cat His	agg Arg	aat Asn	ctg Leu	ctt Leu	cgc Arg	ctt Leu	atc Ile	ggc Gly	ttt Phe	tgt Cys	aca Thr	aca Thr	1107
caa Gln	act Thr	gaa Glu	cga Arg	ctt Leu	ttg Leu	gtg Val	tat Tyr	cct Pro	ttc Phe	atg Met	cag Gln	aat Asn	cta Leu	agt Ser	gtt Val	1155
gca Ala	tat Tyr	tgc Cys	tta Leu	aga Arg	gag Glu	att Ile	aaa Lys	ccc Pro	ggg Gly	gat Asp	cca Pro	gtt Val	ctg Leu	gat Asp	tgg Trp	1203
ttc Phe	agg Arg	agg Arg	aaa Lys	cag Gln	att Ile	gcg Ala	tta Leu	ggt Gly	gca Ala	gca Ala	cga Arg	gga Gly	ctc Leu	gaa Glu	tat Tyr	1251
ctt Leu	cat His	gaa Glu	cat His	tgc Cys	aac Asn	ccg Pro	aag Lys	atc Ile	ata Ile	cac His	aga Arg	gat Asp	gtg Val	aaa Lys	gct Ala	1299
gca Ala	aat Asn	gtg Val	tta Leu	cta Leu	gat Asp	gaa Glu	gac Asp	ttt Phe	gaa Glu	gca Ala	gtg Val	gtt Val	ggt Gly	gat Asp	ttt Phe	1347
ggt Gly	tta Leu	gcc Ala	aag Lys	ttg Leu	gta Val	gat Asp	gtt Val	aga Arg	agg Arg	act Thr	aat Asn	gta Val	acc Thr	act Thr	cag Gln	1395
gtc Val	cga Arg	gga Gly	aca Thr	atg Met	ggt Gly	cat His	att Ile	gca Ala	cca Pro	gaa Glu	tgt Cys	ata Ile	tcc Ser	aca Thr	ggg Gly	1443
aaa Lys	tcg Ser	tca Ser	gag Glu	aaa Lys	acc Thr	gat Asp	gtt Val	ttc Phe	ggg Gly	tac Tyr	gga Gly	att Ile	atg Met	ctt Leu	ctg Leu	1491
gag Glu	ctt Leu	gta Val	act Thr	gga Gly	caa Gln	aga Arg	gca Ala	att Ile	gat Asp	ttc Phe	tcg Ser	cgg Arg	tta Leu	gag Glu	gaa Glu	1539
gaa Glu	gat Asp	gat Asp	gtc Val	tta Leu	ttg Leu	cta Leu	gac Asp	cat His	gtg Val	aag Lys	aaa Lys	ctg Leu	gaa Glu	aga Arg	gag Glu	1587
aag Lys	aga Arg	tta Leu	gaa Glu	gac Asp	ata Ile	gta Val	gat Asp	aag Lys	aag Lys	ctt Leu	gat Asp	gag Glu	gat Asp	tat Tyr	ata Ile	1635
aag Lys	gaa Glu	gaa Glu	gtt Val	gaa Glu	atg Met	atg Met	ata Ile	caa Gln	gta Val	gct Ala	ctg Leu	cta Leu	tgc Cys	aca Thr	caa Gln	1683
gca Ala	gca Ala	ccg Pro	gaa Glu	gaa Glu	cga Arg	cca Pro	gcg Ala	atg Met	tcg Ser	gaa Glu	gta Val	gta Val	aga Arg	atg Met	cta Leu	1731
gaa Glu	gga Gly	gaa Glu	ggg Gly	ctt Leu	gca Ala	gag Glu	aga Arg	tgg Trp	gaa Glu	gag Glu	tgg Trp	cag Gln	aat Asn	ctt Leu	gaa Glu	1779

P59845PC00 sequence listing

gtg acg aga caa gaa gag ttt cag agg ttg cag agg aga ttt gat tgg 1827
Val Thr Arg Gln Glu Glu Phe Gln Arg Leu Gln Arg Arg Phe Asp Trp
590 595 600

ggt gaa gat tcc att aat aat caa gat gct att gaa tta tct ggt gga 1875
Gly Glu Asp Ser Ile Asn Asn Gln Asp Ala Ile Glu Leu Ser Gly Gly
605 610 615

aga tag aaacaaaaaa 1891
Arg

<210> 43
<211> 618
<212> PRT
<213> Arabidopsis thaliana

<400> 43

Met Ala Leu Leu Ile Ile Thr Ala Leu Val Phe Ser Ser Leu Trp Ser
1 5 10 15

Ser Val Ser Pro Asp Ala Gln Gly Asp Ala Leu Phe Ala Leu Arg Ser
20 25 30

Ser Leu Arg Ala Ser Pro Glu Gln Leu Ser Asp Trp Asn Gln Asn Gln
35 40 45

Val Asp Pro Cys Thr Trp Ser Gln Val Ile Cys Asp Asp Lys Lys His
50 55 60

Val Thr Ser Val Thr Leu Ser Tyr Met Asn Phe Ser Ser Gly Thr Leu
65 70 75 80

Ser Ser Gly Ile Gly Ile Leu Thr Thr Leu Lys Thr Leu Thr Leu Lys
85 90 95

Gly Asn Gly Ile Met Gly Gly Ile Pro Glu Ser Ile Gly Asn Leu Ser
100 105 110

Ser Leu Thr Ser Leu Asp Leu Glu Asp Asn His Leu Thr Asp Arg Ile
115 120 125

Pro Ser Thr Leu Gly Asn Leu Lys Asn Leu Gln Phe Phe Arg Thr Leu
130 135 140

Ser Arg Asn Asn Leu Asn Gly Ser Ile Pro Asp Ser Leu Thr Gly Leu
145 150 155 160

Ser Lys Leu Ile Asn Ile Leu Leu Asp Ser Asn Asn Leu Ser Gly Glu
165 170 175

P59845PC00 sequence listing

Ile Pro Gln Ser Leu Phe Lys Ile Pro Lys Tyr Asn Phe Thr Ala Asn
180 185 190

Asn Leu Ser Cys Gly Gly Thr Phe Pro Gln Pro Cys Val Thr Glu Ser
195 200 205

Ser Pro Ser Gly Asp Ser Ser Ser Arg Lys Thr Gly Ile Ile Ala Gly
210 215 220

Val Val Ser Gly Ile Ala Val Ile Leu Leu Gly Phe Phe Phe Phe Phe
225 230 235 240

Phe Cys Lys Asp Lys His Lys Gly Tyr Lys Arg Asp Val Phe Val Asp
245 250 255

Val Ala Gly Thr Asn Phe Lys Lys Gly Leu Ile Ser Gly Glu Val Asp
260 265 270

Arg Arg Ile Ala Phe Gly Gln Leu Arg Arg Phe Ala Trp Arg Glu Leu
275 280 285

Gln Leu Ala Thr Asp Glu Phe Ser Glu Lys Asn Val Leu Gly Gln Gly
290 295 300

Gly Phe Gly Lys Val Tyr Lys Gly Leu Leu Ser Asp Gly Thr Lys Val
305 310 315 320

Ala Val Lys Arg Leu Thr Asp Phe Glu Arg Pro Gly Gly Asp Glu Ala
325 330 335

Phe Gln Arg Glu Val Glu Met Ile Ser Val Ala Val His Arg Asn Leu
340 345 350

Leu Arg Leu Ile Gly Phe Cys Thr Thr Gln Thr Glu Arg Leu Leu Val
355 360 365

Tyr Pro Phe Met Gln Asn Leu Ser Val Ala Tyr Cys Leu Arg Glu Ile
370 375 380

Lys Pro Gly Asp Pro Val Leu Asp Trp Phe Arg Arg Lys Gln Ile Ala
385 390 395 400

Leu Gly Ala Ala Arg Gly Leu Glu Tyr Leu His Glu His Cys Asn Pro
405 410 415

Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn Val Leu Leu Asp Glu
420 425 430

P59845PC00 sequence listing

Asp Phe Glu Ala Val Val Gly Asp Phe Gly Leu Ala Lys Leu Val Asp
435 440 445

Val Arg Arg Thr Asn Val Thr Thr Gln Val Arg Gly Thr Met Gly His
450 455 460

Ile Ala Pro Glu Cys Ile Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp
465 470 475 480

Val Phe Gly Tyr Gly Ile Met Leu Leu Glu Leu Val Thr Gly Gln Arg
485 490 495

Ala Ile Asp Phe Ser Arg Leu Glu Glu Glu Asp Asp Val Leu Leu Leu
500 505 510

Asp His Val Lys Lys Leu Glu Arg Glu Lys Arg Leu Glu Asp Ile Val
515 520 525

Asp Lys Lys Leu Asp Glu Asp Tyr Ile Lys Glu Glu Val Glu Met Met
530 535 540

Ile Gln Val Ala Leu Leu Cys Thr Gln Ala Ala Pro Glu Glu Arg Pro
545 550 555 560

Ala Met Ser Glu Val Val Arg Met Leu Glu Gly Glu Gly Leu Ala Glu
565 570 575

Arg Trp Glu Glu Trp Gln Asn Leu Glu Val Thr Arg Gln Glu Glu Phe
580 585 590

Gln Arg Leu Gln Arg Arg Phe Asp Trp Gly Glu Asp Ser Ile Asn Asn
595 600 605

Gln Asp Ala Ile Glu Leu Ser Gly Gly Arg
610 615

<210> 44
<211> 1864
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (91)..(1830)

<400> 44
aacggtgaaa gtttccatga tcctcttcga ggattcattc aaagaaattg ctttagatgg

60

P59845PC00 sequence listing

aacaatcaga aattgatctt acaatgtttc atg gcc tta gct ttt gtg gga atc	114
Met Ala Leu Ala Phe Val Gly Ile	
1 5	
act tcg tca aca act caa cca gat atc gaa gga gga gct ctg ttg cag	162
Thr Ser Ser Thr Thr Gln Pro Asp Ile Glu Gly Gly Ala Leu Leu Gln	
10 15 20	
ctc aga gat tcg ctt aat gat tcg agc aat cgt cta aaa tgg aca cgc	210
Leu Arg Asp Ser Leu Asn Asp Ser Ser Asn Arg Leu Lys Trp Thr Arg	
25 30 35 40	
gat ttt gtg agc cct tgc tat agt tgg tct tat gtt acc tgc aga ggc	258
Asp Phe Val Ser Pro Cys Tyr Ser Trp Ser Tyr Val Thr Cys Arg Gly	
45 50 55	
cag agt gtt gtg gct cta aat ctt gcc tcg agt gga ttc aca gga aca	306
Gln Ser Val Val Ala Leu Asn Leu Ala Ser Ser Gly Phe Thr Gly Thr	
60 65 70	
ctc tct cca gct att aca aaa ctg aag ttc ttg gtt acc tta gag tta	354
Leu Ser Pro Ala Ile Thr Lys Leu Lys Phe Leu Val Thr Leu Glu Leu	
75 80 85	
cag aac aat agt tta tct ggt gcc tta cca gat tct ctt ggg aac atg	402
Gln Asn Asn Ser Leu Ser Gly Ala Leu Pro Asp Ser Leu Gly Asn Met	
90 95 100	
gtt aat cta cag act tta aac cta tca gtg aat agt ttc agc gga tcg	450
Val Asn Leu Gln Thr Leu Asn Leu Ser Val Asn Ser Phe Ser Gly Ser	
105 110 115 120	
ata cca gcg agc tgg agt cag ctc tcg aat cta aag cac ttg gat ctc	498
Ile Pro Ala Ser Trp Ser Gln Leu Ser Asn Leu Lys His Leu Asp Leu	
125 130 135	
tca tcc aat aat tta aca gga agc atc cca aca caa ttc ttc tca atc	546
Ser Ser Asn Asn Leu Thr Gly Ser Ile Pro Thr Gln Phe Phe Ser Ile	
140 145 150	
cca aca ttc gat ttt tca gga act cag ctt ata tgc ggt aaa agt ttg	594
Pro Thr Phe Asp Phe Ser Gly Thr Gln Leu Ile Cys Gly Lys Ser Leu	
155 160 165	
aat cag cct tgt tct tca agt tct cgt ctt cca gtc aca tcc tcc aag	642
Asn Gln Pro Cys Ser Ser Ser Ser Arg Leu Pro Val Thr Ser Ser Lys	
170 175 180	
aaa aag ctg aga gac att act ttg act gca agt tgt gtt gct tct ata	690
Lys Lys Leu Arg Asp Ile Thr Leu Thr Ala Ser Cys Val Ala Ser Ile	
185 190 195 200	
atc tta ttc ctt gga gca atg gtt atg tat cat cac cat cgc gtc cgc	738
Ile Leu Phe Leu Gly Ala Met Val Met Tyr His His His Arg Val Arg	
205 210 215	
aga acc aaa tac gac atc ttt ttt gat gta gct ggg gaa gat gac agg	786
Arg Thr Lys Tyr Asp Ile Phe Phe Asp Val Ala Gly Glu Asp Asp Arg	
220 225 230	
aag att tcc ttt gga caa cta aaa cga ttc tct tta cgt gaa atc cag	834
Lys Ile Ser Phe Gly Gln Leu Lys Arg Phe Ser Leu Arg Glu Ile Gln	
235 240 245	

P59845PC00 sequence listing

ctc gca aca gat agt ttc aac gag agc aat ttg ata gga caa gga gga Leu Ala Thr Asp Ser Phe Asn Glu Ser Asn Leu Ile Gly Gln Gly Gly	882
250 255 260	
ttt ggt aaa gta tac aga ggt ttg ctt cca gac aaa aca aaa gtt gca Phe Gly Lys Val Tyr Arg Gly Leu Leu Pro Asp Lys Thr Lys Val Ala	930
265 270 275 280	
gtg aaa cgc ctt gcg gat tac ttc agt cct gga gga gaa gct gct ttc Val Lys Arg Leu Ala Asp Tyr Phe Ser Pro Gly Gly Glu Ala Ala Phe	978
285 290 295	
caa aga gag att cag ctc ata agc gtt gcg gtt cat aaa aat ctc tta Gln Arg Glu Ile Gln Leu Ile Ser Val Ala Val His Lys Asn Leu Leu	1026
300 305 310	
cgc ctt att ggc ttc tgc aca act tcc tct gag aga atc ctt gtt tat Arg Leu Ile Gly Phe Cys Thr Thr Ser Ser Glu Arg Ile Leu Val Tyr	1074
315 320 325	
cca tac atg gaa aat ctt agt gtt gca tat cga cta aga gat ttg aaa Pro Tyr Met Glu Asn Leu Ser Val Ala Tyr Arg Leu Arg Asp Leu Lys	1122
330 335 340	
gcg gga gag gaa gga tta gac tgg cca aca agg aag cgt gta gct ttt Ala Gly Glu Glu Gly Leu Asp Trp Pro Thr Arg Lys Arg Val Ala Phe	1170
345 350 355 360	
ggt tca gct cac ggt tta gag tat cta cac gaa cat tgt aac ccg aag Gly Ser Ala His Gly Leu Glu Tyr Leu His Glu His Cys Asn Pro Lys	1218
365 370 375	
atc ata cac cgc gat ctc aag gct gca aac ata ctt tta gac aac aat Ile Ile His Arg Asp Leu Lys Ala Ala Asn Ile Leu Leu Asp Asn Asn	1266
380 385 390	
ttt gag cca gtt ctt gga gat ttc ggt tta gct aag ctt gtg gac aca Phe Glu Pro Val Leu Gly Asp Phe Gly Leu Ala Lys Leu Val Asp Thr	1314
395 400 405	
tct ctg act cat gtc aca act caa gtc cga ggc aca atg ggt cac att Ser Leu Thr His Val Thr Thr Gln Val Arg Gly Thr Met Gly His Ile	1362
410 415 420	
gcg cca gag tat ctc tgc aca gga aaa tca tct gaa aaa acc gat gtt Ala Pro Glu Tyr Leu Cys Thr Gly Lys Ser Ser Glu Lys Thr Asp Val	1410
425 430 435 440	
ttt ggt tac ggt ata acg ctt ctt gag ctt gtt act ggt cag cgc gca Phe Gly Tyr Gly Ile Thr Leu Leu Glu Leu Val Thr Gly Gln Arg Ala	1458
445 450 455	
atc gat ttt tca cgc ttg gaa gaa gag gaa aat att ctc ttg ctt gat Ile Asp Phe Ser Arg Leu Glu Glu Glu Glu Asn Ile Leu Leu Leu Asp	1506
460 465 470	
cat ata aag aag ttg ctt aga gaa cag aga ctt aga gac att gtt gat His Ile Lys Lys Leu Leu Arg Glu Gln Arg Leu Arg Asp Ile Val Asp	1554
475 480 485	
agc aat ttg act aca tat gac tcc aaa gaa gtt gaa aca atc gtt caa Ser Asn Leu Thr Thr Tyr Asp Ser Lys Glu Val Glu Thr Ile Val Gln	1602

P59845PC00 sequence listing

490	495	500	
gtg gct ctt ctc tgc aca caa ggc tca cca gaa gat aga cca gcg atg			1650
Val Ala Leu Leu Cys Thr Gln Gly Ser Pro Glu Asp Arg Pro Ala Met			
505	510	515	520
tct gaa gtg gtc aaa atg ctt caa ggg act ggt ggt ttg gct gag aaa			1698
Ser Glu Val Val Lys Met Leu Gln Gly Thr Gly Gly Leu Ala Glu Lys			
	525	530	535
tgg act gaa tgg gaa caa ctt gaa gaa gtt agg aac aaa gaa gca ttg			1746
Trp Thr Glu Trp Glu Gln Leu Glu Glu Val Arg Asn Lys Glu Ala Leu			
	540	545	550
ttg ctt ccg act tta ccg gct act tgg gat gaa gaa gaa acc acc gtt			1794
Leu Leu Pro Thr Leu Pro Ala Thr Trp Asp Glu Glu Glu Thr Thr Val			
	555	560	565
gat caa gaa tct atc cga tta tcg aca gca aga tga agaagaaaca			1840
Asp Gln Glu Ser Ile Arg Leu Ser Thr Ala Arg			
	570	575	
gagagagaaa gatattctatg aaaa			1864
<210>	45		
<211>	579		
<212>	PRT		
<213>	Arabidopsis thaliana		
<400>	45		
Met Ala Leu Ala Phe Val Gly Ile Thr Ser Ser Thr Thr Gln Pro Asp			
1	5	10	15
Ile Glu Gly Gly Ala Leu Leu Gln Leu Arg Asp Ser Leu Asn Asp Ser			
	20	25	30
Ser Asn Arg Leu Lys Trp Thr Arg Asp Phe Val Ser Pro Cys Tyr Ser			
	35	40	45
Trp Ser Tyr Val Thr Cys Arg Gly Gln Ser Val Val Ala Leu Asn Leu			
	50	55	60
Ala Ser Ser Gly Phe Thr Gly Thr Leu Ser Pro Ala Ile Thr Lys Leu			
	65	70	75
Lys Phe Leu Val Thr Leu Glu Leu Gln Asn Asn Ser Leu Ser Gly Ala			
	85	90	95
Leu Pro Asp Ser Leu Gly Asn Met Val Asn Leu Gln Thr Leu Asn Leu			
	100	105	110
Ser Val Asn Ser Phe Ser Gly Ser Ile Pro Ala Ser Trp Ser Gln Leu			
	115	120	125

P59845PC00 sequence listing

Ser Asn Leu Lys His Leu Asp Leu Ser Ser Asn Asn Leu Thr Gly Ser
130 135 140

Ile Pro Thr Gln Phe Phe Ser Ile Pro Thr Phe Asp Phe Ser Gly Thr
145 150 155 160

Gln Leu Ile Cys Gly Lys Ser Leu Asn Gln Pro Cys Ser Ser Ser Ser
165 170 175

Arg Leu Pro Val Thr Ser Ser Lys Lys Lys Leu Arg Asp Ile Thr Leu
180 185 190

Thr Ala Ser Cys Val Ala Ser Ile Ile Leu Phe Leu Gly Ala Met Val
195 200 205

Met Tyr His His His Arg Val Arg Arg Thr Lys Tyr Asp Ile Phe Phe
210 215 220

Asp Val Ala Gly Glu Asp Asp Arg Lys Ile Ser Phe Gly Gln Leu Lys
225 230 235 240

Arg Phe Ser Leu Arg Glu Ile Gln Leu Ala Thr Asp Ser Phe Asn Glu
245 250 255

Ser Asn Leu Ile Gly Gln Gly Gly Phe Gly Lys Val Tyr Arg Gly Leu
260 265 270

Leu Pro Asp Lys Thr Lys Val Ala Val Lys Arg Leu Ala Asp Tyr Phe
275 280 285

Ser Pro Gly Gly Glu Ala Ala Phe Gln Arg Glu Ile Gln Leu Ile Ser
290 295 300

Val Ala Val His Lys Asn Leu Leu Arg Leu Ile Gly Phe Cys Thr Thr
305 310 315 320

Ser Ser Glu Arg Ile Leu Val Tyr Pro Tyr Met Glu Asn Leu Ser Val
325 330 335

Ala Tyr Arg Leu Arg Asp Leu Lys Ala Gly Glu Glu Gly Leu Asp Trp
340 345 350

Pro Thr Arg Lys Arg Val Ala Phe Gly Ser Ala His Gly Leu Glu Tyr
355 360 365

Leu His Glu His Cys Asn Pro Lys Ile Ile His Arg Asp Leu Lys Ala
370 375 380

P59845PC00 sequence listing

Ala Asn Ile Leu Leu Asp Asn Asn Phe Glu Pro Val Leu Gly Asp Phe
385 390 395 400

Gly Leu Ala Lys Leu Val Asp Thr Ser Leu Thr His Val Thr Thr Gln
405 410 415

Val Arg Gly Thr Met Gly His Ile Ala Pro Glu Tyr Leu Cys Thr Gly
420 425 430

Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Ile Thr Leu Leu
435 440 445

Glu Leu Val Thr Gly Gln Arg Ala Ile Asp Phe Ser Arg Leu Glu Glu
450 455 460

Glu Glu Asn Ile Leu Leu Leu Asp His Ile Lys Lys Leu Leu Arg Glu
465 470 475 480

Gln Arg Leu Arg Asp Ile Val Asp Ser Asn Leu Thr Thr Tyr Asp Ser
485 490 495

Lys Glu Val Glu Thr Ile Val Gln Val Ala Leu Leu Cys Thr Gln Gly
500 505 510

Ser Pro Glu Asp Arg Pro Ala Met Ser Glu Val Val Lys Met Leu Gln
515 520 525

Gly Thr Gly Gly Leu Ala Glu Lys Trp Thr Glu Trp Glu Gln Leu Glu
530 535 540

Glu Val Arg Asn Lys Glu Ala Leu Leu Leu Pro Thr Leu Pro Ala Thr
545 550 555 560

Trp Asp Glu Glu Glu Thr Thr Val Asp Gln Glu Ser Ile Arg Leu Ser
565 570 575

Thr Ala Arg

<210> 46
<211> 1980
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (40)..(1923)

P59845PC00 sequence listing

```

<400> 46
tcttccttct ccttctggta atctaatacta aagcttttc atg gtg gtg atg aag      54
                               Met Val Val Met Lys
                               1      5

ata ttc tct gtt ctg tta cta cta tgt ttc ttc gtt act tgt tct ctc      102
Ile Phe Ser Val Leu Leu Leu Cys Phe Phe Val Thr Cys Ser Leu
                               10      15      20

tct tct gaa ccc aga aac cct gaa gtg gag gcg ttg ata aac ata aag      150
Ser Ser Glu Pro Arg Asn Pro Glu Val Glu Ala Leu Ile Asn Ile Lys
                               25      30      35

aac gag tta cat gat cca cat ggt gtt ttc aaa aac tgg gat gag ttt      198
Asn Glu Leu His Asp Pro His Gly Val Phe Lys Asn Trp Asp Glu Phe
                               40      45      50

tct gtt gat cct tgt agc tgg act atg atc tct tgt tct tca gac aac      246
Ser Val Asp Pro Cys Ser Trp Thr Met Ile Ser Cys Ser Ser Asp Asn
                               55      60      65

ctc gta att ggc tta gga gct cca agt cag tct ctt tca gga act tta      294
Leu Val Ile Gly Leu Gly Ala Pro Ser Gln Ser Leu Ser Gly Thr Leu
                               70      75      80      85

tct ggg tct att gga aat ctc act aat ctt cga caa gtg tca tta cag      342
Ser Gly Ser Ile Gly Asn Leu Thr Asn Leu Arg Gln Val Ser Leu Gln
                               90      95      100

aac aat aac atc tcc ggt aaa atc cca ccg gag att tgt tct ctt ccc      390
Asn Asn Asn Ile Ser Gly Lys Ile Pro Pro Glu Ile Cys Ser Leu Pro
                               105      110      115

aaa tta cag act ctg gat tta tcc aat aac cgg ttc tcc ggt gaa atc      438
Lys Leu Gln Thr Leu Asp Leu Ser Asn Asn Arg Phe Ser Gly Glu Ile
                               120      125      130

ccc ggt tct gtt aac cag ctg agt aat ctc caa tat ctg ttg aac aac      486
Pro Gly Ser Val Asn Gln Leu Ser Asn Leu Gln Tyr Leu Leu Asn Asn
                               135      140      145

aac tca tta tct ggg ccc ttt cct gct tct ctg tct caa atc cct cac      534
Asn Ser Leu Ser Gly Pro Phe Pro Ala Ser Leu Ser Gln Ile Pro His
                               150      155      160      165

ctc tct ttc tta gac ttg tct tat aac aat ctc aga ggt cct gtt cct      582
Leu Ser Phe Leu Asp Leu Ser Tyr Asn Asn Leu Arg Gly Pro Val Pro
                               170      175      180

aaa ttt cct gca agg aca ttc aat gtt gct ggg aac cct ttg att tgt      630
Lys Phe Pro Ala Arg Thr Phe Asn Val Ala Gly Asn Pro Leu Ile Cys
                               185      190      195

aaa aac agc cta ccg gag att tgt tca gga tca atc agt gca agc cct      678
Lys Asn Ser Leu Pro Glu Ile Cys Ser Gly Ser Ile Ser Ala Ser Pro
                               200      205      210

ctt tct gtc tct tta cgt tct tca tca gga cgt aga acc aac ata tta      726
Leu Ser Val Ser Leu Arg Ser Ser Gly Arg Thr Asn Ile Leu
                               215      220      225

gca gtt gca ctt ggt gta agc ctt ggc ttt gct gtt agt gta atc ctc      774

```

P59845PC00 sequence listing

Ala Val Ala Leu Gly Val Ser Leu Gly Phe Ala Val Ser Val Ile Leu	
230 235 240 245	
tct ctc ggg ttc att tgg tat cga aag aaa caa aga cgg tta acg atg	822
Ser Leu Gly Phe Ile Trp Tyr Arg Lys Lys Gln Arg Arg Leu Thr Met	
250 255 260	
ctt cgc att aac aag caa gag gaa ggg tta ctt ggg ttg gga aat cta	870
Leu Arg Ile Asn Lys Gln Glu Glu Gly Leu Leu Gly Leu Gly Asn Leu	
265 270 275	
aga agc ttc aca ttc agg gaa ctt cat gta gct acg gat ggt ttt agt	918
Arg Ser Phe Thr Phe Arg Glu Leu His Val Ala Thr Asp Gly Phe Ser	
280 285 290	
tcc aag agt att ctt ggt gct ggt ggg ttt ggt aat gtc tac aga gga	966
Ser Lys Ser Ile Leu Gly Ala Gly Gly Phe Gly Asn Val Tyr Arg Gly	
295 300 305	
aaa ttc ggg gat ggg aca gtg gtt gca gtg aaa cga ttg aaa gat gtg	1014
Lys Phe Gly Asp Gly Thr Val Val Ala Val Lys Arg Leu Lys Asp Val	
310 315 320 325	
aat gga acc tcc ggg aac tca cag ttt cgt act gag ctt gag atg atc	1062
Asn Gly Thr Ser Gly Asn Ser Gln Phe Arg Thr Glu Leu Glu Met Ile	
330 335 340	
agc tta gct gtt cat agg aat ttg ctt cgg tta atc ggt tat tgt gcg	1110
Ser Leu Ala Val His Arg Asn Leu Leu Arg Leu Ile Gly Tyr Cys Ala	
345 350 355	
agt tct agc gaa aga ctt ctt gtt tac cct tac atg tcc aat ggc agc	1158
Ser Ser Ser Glu Arg Leu Leu Val Tyr Pro Tyr Met Ser Asn Gly Ser	
360 365 370	
gtc gcc tct agg ctc aaa gct aag cca gcg ttg gac tgg aac aca agg	1206
Val Ala Ser Arg Leu Lys Ala Lys Pro Ala Leu Asp Trp Asn Thr Arg	
375 380 385	
aag aag ata gcg att gga gct gca aga ggg ttg ttt tat cta cac gag	1254
Lys Lys Ile Ala Ile Gly Ala Ala Arg Gly Leu Phe Tyr Leu His Glu	
390 395 400 405	
caa tgc gat ccc aag att att cac cga gat gtc aag gca gca aac att	1302
Gln Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn Ile	
410 415 420	
ctc cta gat gag tat ttt gaa gca gtt gtt ggg gat ttt gga cta gca	1350
Leu Leu Asp Glu Tyr Phe Glu Ala Val Val Gly Asp Phe Gly Leu Ala	
425 430 435	
aag cta ctc aac cac gag gat tca cat gtc aca acc gcg gtt aga gga	1398
Lys Leu Leu Asn His Glu Asp Ser His Val Thr Thr Ala Val Arg Gly	
440 445 450	
act gtt ggt cac att gca cct gag tat ctc tcc acc ggt cag tca tct	1446
Thr Val Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Gln Ser Ser	
455 460 465	
gag aaa acc gat gtc ttt ggg ttc ggt ata ctt ttg cta gag ctc atc	1494
Glu Lys Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu Glu Leu Ile	
470 475 480 485	

P59845PC00 sequence listing

aca gga atg aga gct ctc gag ttt ggc aag tct gtt agc cag aaa gga Thr Gly Met Arg Ala Leu Glu Phe Gly Lys Ser Val Ser Gln Lys Gly 490 495 500	1542
gct atg cta gaa tgg gtg agg aag cta cac aag gaa atg aaa gta gag Ala Met Leu Glu Trp Val Arg Lys Leu His Lys Glu Met Lys Val Glu 505 510 515	1590
gag cta gta gac cga gaa ctg ggg aca acc tac gat aga ata gaa gtt Glu Leu Val Asp Arg Glu Leu Gly Thr Thr Tyr Asp Arg Ile Glu Val 520 525 530	1638
gga gag atg cta caa gtg gca ctg ctc tgc act cag ttt ctt cca gct Gly Glu Met Leu Gln Val Ala Leu Leu Cys Thr Gln Phe Leu Pro Ala 535 540 545	1686
cac aga ccc aaa atg tct gaa gta gtt cag atg ctt gaa gga gat gga His Arg Pro Lys Met Ser Glu Val Val Gln Met Leu Glu Gly Asp Gly 550 555 560 565	1734
tta gct gag aga tgg gct gct tca cat gac cat tca cat ttc tac cat Leu Ala Glu Arg Trp Ala Ala Ser His Asp His Ser His Phe Tyr His 570 575 580	1782
gcc aac atg tct tac agg act att acc tct act gat ggc aac aac caa Ala Asn Met Ser Tyr Arg Thr Ile Thr Ser Thr Asp Gly Asn Asn Gln 585 590 595	1830
acc aaa cat ctg ttt ggc tcc tca gga ttt gaa gat gaa gat gat aat Thr Lys His Leu Phe Gly Ser Ser Gly Phe Glu Asp Glu Asp Asp Asn 600 605 610	1878
caa gcg tta gat tca ttc gcc atg gaa cta tct ggt cca agg tag Gln Ala Leu Asp Ser Phe Ala Met Glu Leu Ser Gly Pro Arg 615 620 625	1923
taaatcttgg acacagaaaag aaacagatat aatatcccca tgacttcaat ttttgtt	1980

<210> 47
 <211> 627
 <212> PRT
 <213> Arabidopsis thaliana

<400> 47

Met Val Val Met Lys Ile Phe Ser Val Leu Leu Leu Leu Cys Phe Phe
 1 5 10 15

Val Thr Cys Ser Leu Ser Ser Glu Pro Arg Asn Pro Glu Val Glu Ala
 20 25 30

Leu Ile Asn Ile Lys Asn Glu Leu His Asp Pro His Gly Val Phe Lys
 35 40 45

Asn Trp Asp Glu Phe Ser Val Asp Pro Cys Ser Trp Thr Met Ile Ser
 50 55 60

Cys Ser Ser Asp Asn Leu Val Ile Gly Leu Gly Ala Pro Ser Gln Ser
 Page 66

P59845PC00 sequence listing

65		70		75		80
Leu	Ser	Gly	Thr	Leu	Ser	Gly
				85		
				Ser	Ile	Gly
						90
				Asn	Leu	Thr
						Asn
						Leu
						Arg
						95
Gln	Val	Ser	Leu	Gln	Asn	Asn
			100			Asn
						Ile
						105
				Ser	Gly	Lys
						Ile
						Pro
						110
						Pro
						Glu
Ile	Cys	Ser	Leu	Pro	Lys	Leu
			115			Gln
						120
				Thr	Leu	Asp
						Leu
						Ser
						125
				Asn	Asn	Arg
Phe	Ser	Gly	Glu	Ile	Pro	Gly
			130			135
				Ser	Val	Asn
						Gln
						Leu
						140
				Ser	Asn	Leu
						Gln
Tyr	Leu	Leu	Asn	Asn	Ser	Leu
			145			Ser
						Gly
						Pro
						155
				Phe	Pro	Ala
						Ser
						Leu
						160
Ser	Gln	Ile	Pro	His	Leu	Ser
			165			Phe
						Leu
						Asp
						170
				Leu	Ser	Tyr
						Asn
						175
				Asn	Leu	
Arg	Gly	Pro	Val	Pro	Lys	Phe
			180			Pro
						Ala
						Arg
						Thr
						Phe
						Asn
						Val
						Ala
						Gly
Asn	Pro	Leu	Ile	Cys	Lys	Asn
		195				Ser
						Leu
						Pro
						Glu
						Ile
						Cys
						205
				Ser	Gly	Ser
Ile	Ser	Ala	Ser	Pro	Leu	Ser
			210			Val
						Ser
						Leu
						Arg
						Ser
						220
				Ser	Ser	Ser
						Gly
						Arg
Arg	Thr	Asn	Ile	Leu	Ala	Val
			225			Ala
						Leu
						Gly
						Val
						235
				Ser	Leu	Gly
						Phe
						Ala
						240
Val	Ser	Val	Ile	Leu	Ser	Leu
			245			Gly
						Phe
						Ile
						250
				Trp	Tyr	Arg
						Lys
						Lys
						255
				Gln	Glu	Glu
						Gly
						Leu
						Leu
Arg	Arg	Leu	Thr	Met	Leu	Arg
			260			Ile
						Asn
						265
				Lys	Gln	Glu
						Glu
						Gly
						Leu
						Leu
Gly	Leu	Gly	Asn	Leu	Arg	Ser
		275				Phe
						Thr
						Phe
						Arg
						Glu
						Leu
						His
						Val
						Ala
Thr	Asp	Gly	Phe	Ser	Ser	Lys
			290			295
				Ser	Ile	Leu
						Gly
						Ala
						Gly
						Gly
						Phe
						Gly
Asn	Val	Tyr	Arg	Gly	Lys	Phe
			305			Gly
						Asp
						Gly
						Thr
						Val
						Val
						Ala
						Val
						Lys
						320

P59845PC00 sequence listing

Arg Leu Lys Asp Val Asn Gly Thr Ser Gly Asn Ser Gln Phe Arg Thr
325 330 335

Glu Leu Glu Met Ile Ser Leu Ala Val His Arg Asn Leu Leu Arg Leu
340 345 350

Ile Gly Tyr Cys Ala Ser Ser Ser Glu Arg Leu Leu Val Tyr Pro Tyr
355 360 365

Met Ser Asn Gly Ser Val Ala Ser Arg Leu Lys Ala Lys Pro Ala Leu
370 375 380

Asp Trp Asn Thr Arg Lys Lys Ile Ala Ile Gly Ala Ala Arg Gly Leu
385 390 395 400

Phe Tyr Leu His Glu Gln Cys Asp Pro Lys Ile Ile His Arg Asp Val
405 410 415

Lys Ala Ala Asn Ile Leu Leu Asp Glu Tyr Phe Glu Ala Val Val Gly
420 425 430

Asp Phe Gly Leu Ala Lys Leu Leu Asn His Glu Asp Ser His Val Thr
435 440 445

Thr Ala Val Arg Gly Thr Val Gly His Ile Ala Pro Glu Tyr Leu Ser
450 455 460

Thr Gly Gln Ser Ser Glu Lys Thr Asp Val Phe Gly Phe Gly Ile Leu
465 470 475 480

Leu Leu Glu Leu Ile Thr Gly Met Arg Ala Leu Glu Phe Gly Lys Ser
485 490 495

Val Ser Gln Lys Gly Ala Met Leu Glu Trp Val Arg Lys Leu His Lys
500 505 510

Glu Met Lys Val Glu Glu Leu Val Asp Arg Glu Leu Gly Thr Thr Tyr
515 520 525

Asp Arg Ile Glu Val Gly Glu Met Leu Gln Val Ala Leu Leu Cys Thr
530 535 540

Gln Phe Leu Pro Ala His Arg Pro Lys Met Ser Glu Val Val Gln Met
545 550 555 560

Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Ala Ala Ser His Asp His
565 570 575

P59845PC00 sequence listing

Ser His Phe Tyr His Ala Asn Met Ser Tyr Arg Thr Ile Thr Ser Thr
580 585 590

Asp Gly Asn Asn Gln Thr Lys His Leu Phe Gly Ser Ser Gly Phe Glu
595 600 605

Asp Glu Asp Asp Asn Gln Ala Leu Asp Ser Phe Ala Met Glu Leu Ser
610 615 620

Gly Pro Arg
625

<210> 48
<211> 1893
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (28)..(1839)

<400> 48
ctagagaatt cttatacttt ttctacg atg gag att tct ttg atg aag ttt ctg 54
Met Glu Ile Ser Leu Met Lys Phe Leu
1 5

ttt tta gga atc tgg gtt tat tat tac tct gtt ctt gac tct gtt tct 102
Phe Leu Gly Ile Trp Val Tyr Tyr Tyr Ser Val Leu Asp Ser Val Ser
10 15 20 25

gcc atg gat agt ctt tta tct ccc aag gtg gct gcg tta atg tca gtg 150
Ala Met Asp Ser Leu Leu Ser Pro Lys Val Ala Ala Leu Met Ser Val
30 35 40

aag aac aag atg aaa gat gag aaa gag gtt ttg tct ggt tgg gat att 198
Lys Asn Lys Met Lys Asp Glu Lys Glu Val Leu Ser Gly Trp Asp Ile
45 50 55

aac tct gtt gat cct tgt act tgg aac atg gtt ggt tgt tct tct gaa 246
Asn Ser Val Asp Pro Cys Thr Trp Asn Met Val Gly Cys Ser Ser Glu
60 65 70

ggt ttt gtg gtt tct cta gag atg gct agt aaa gga tta tca ggg ata 294
Gly Phe Val Val Ser Leu Glu Met Ala Ser Lys Gly Leu Ser Gly Ile
75 80 85

cta tct act agt att ggg gaa tta act cat ctt cat act ttg tta ctt 342
Leu Ser Thr Ser Ile Gly Glu Leu Thr His Leu His Thr Leu Leu
90 95 100 105

cag aat aat cag tta act ggt ccg att cct tct gag tta ggc caa ctc 390
Gln Asn Asn Gln Leu Thr Gly Pro Ile Pro Ser Glu Leu Gly Gln Leu
110 115 120

tct gag ctt gaa acg ctt gat tta tcg ggg aat cgg ttt agt ggt gaa 438
Ser Glu Leu Glu Thr Leu Asp Leu Ser Gly Asn Arg Phe Ser Gly Glu
125 130 135

P59845PC00 sequence listing

atc cca gct tct tta ggg ttc tta act cac tta aac tac ttg cgg ctt Ile Pro Ala Ser Leu Gly Phe Leu Thr His Leu Asn Tyr Leu Arg Leu 140 145 150	486
agc agg aat ctt tta tct ggg caa gtc cct cac ctc gtc gct ggc ctc Ser Arg Asn Leu Leu Ser Gly Gln Val Pro His Leu Val Ala Gly Leu 155 160 165	534
tca ggt ctt tct ttc ttg gat cta tct ttc aac aat cta agc gga cca Ser Gly Leu Ser Phe Leu Asp Leu Ser Phe Asn Asn Leu Ser Gly Pro 170 175 180 185	582
act ccg aat ata tca gca aaa gat tac agg aaa tgc att tct ttg tgg Thr Pro Asn Ile Ser Ala Lys Asp Tyr Arg Lys Cys Ile Ser Leu Trp 190 195 200	630
tcc agc ttc cca aga gct ttg ctc aga tgc tac acc tgt gag aaa tgc Ser Ser Phe Pro Arg Ala Leu Leu Arg Cys Tyr Thr Cys Glu Lys Cys 205 210 215	678
tgc aat cga tct gca gcg acg ggt ttg tct gaa aag gac aat agc aaa Cys Asn Arg Ser Ala Ala Thr Gly Leu Ser Glu Lys Asp Asn Ser Lys 220 225 230	726
cat cac agc tta gtg ctc tct ttt gca ttt ggc att gtt gtt gcc ttt His His Ser Leu Val Leu Ser Phe Ala Phe Gly Ile Val Val Ala Phe 235 240 245	774
atc atc tcc cta atg ttt ctc ttc ttc tgg gtg ctt tgg cat cga tca Ile Ile Ser Leu Met Phe Leu Phe Phe Trp Val Leu Trp His Arg Ser 250 255 260 265	822
cgt ctc tca aga tca cac gtg cag caa gac tac gaa ttt gaa atc ggc Arg Leu Ser Arg Ser His Val Gln Gln Asp Tyr Glu Phe Glu Ile Gly 270 275 280	870
cat ctg aaa agg ttc agt ttt cgc gaa ata caa acc gca aca agc aat His Leu Lys Arg Phe Ser Phe Arg Glu Ile Gln Thr Ala Thr Ser Asn 285 290 295	918
ttt agt cca aag aac att ttg gga caa gga ggg ttt ggg atg gtt tat Phe Ser Pro Lys Asn Ile Leu Gly Gln Gly Gly Phe Gly Met Val Tyr 300 305 310	966
aaa ggg tat ctc cca aat gga act gtg gtg gca gtt aaa aga ttg aaa Lys Gly Tyr Leu Pro Asn Gly Thr Val Val Ala Val Lys Arg Leu Lys 315 320 325	1014
gat ccg att tat aca gga gaa gtt cag ttt caa acc gaa gta gag atg Asp Pro Ile Tyr Thr Gly Glu Val Gln Phe Gln Thr Glu Val Glu Met 330 335 340 345	1062
att ggc tta gct gtt cac cgt aac ctt tta cgc ctc ttt gga ttc tgt Ile Gly Leu Ala Val His Arg Asn Leu Leu Arg Leu Phe Gly Phe Cys 350 355 360	1110
atg acc ccg gaa gag aga atg ctt gtg tat ccg tac atg cca aat gga Met Thr Pro Glu Glu Arg Met Leu Val Tyr Pro Tyr Met Pro Asn Gly 365 370 375	1158
agc gta gct gat cgt ctg aga gat tgg aat cgg agg ata agc att gca Ser Val Ala Asp Arg Leu Arg Asp Trp Asn Arg Arg Ile Ser Ile Ala 380 385 390 395	1206

P59845PC00 sequence listing

380	385	390	
ctc ggc gca gct cga gga ctt gtt tac ttg cac gag caa tgc aat cca Leu Gly Ala Ala Arg Gly Leu Val Tyr Leu His Glu Gln Cys Asn Pro	395	400	405
1254			
aag att att cac aga gac gtc aaa gct gca aat att cta ctt gat gag Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu	410	415	420
1302			
agc ttt gaa gca ata gtt ggc gat ttt ggt cta gca aag ctt tta gac Ser Phe Glu Ala Ile Val Gly Asp Phe Gly Leu Ala Lys Leu Leu Asp	430	435	440
1350			
cag aga gat tca cat gtc act acc gca gtc cga gga acc att gga cac Gln Arg Asp Ser His Val Thr Thr Ala Val Arg Gly Thr Ile Gly His	445	450	455
1398			
atc gct ccc gag tac ctt tcc act gga cag tcc tca gag aaa acc gat Ile Ala Pro Glu Tyr Leu Ser Thr Thr Gly Gln Ser Ser Glu Lys Thr Asp	460	465	470
1446			
gtt ttc gga ttc gga gta cta atc ctt gaa ctc ata aca ggt cat aag Val Phe Gly Phe Gly Val Leu Ile Leu Glu Leu Ile Thr Gly His Lys	475	480	485
1494			
atg att gat caa ggc aat ggt caa gtt cga aaa gga atg ata ttg agc Met Ile Asp Gln Gly Asn Gly Gln Val Arg Lys Gly Met Ile Leu Ser	490	495	500
1542			
tgg gta agg aca ttg aaa gca gag aag aga ttt gca gag atg gtg gac Trp Val Arg Thr Leu Lys Ala Glu Lys Arg Phe Ala Glu Met Val Asp	510	515	520
1590			
aga gat ttg aag gga gag ttt gat gat ttg gtg ttg gag gaa gta gtg Arg Asp Leu Lys Gly Glu Phe Asp Asp Leu Val Leu Glu Glu Val Val	525	530	535
1638			
gaa ttg gct ttg ctt tgt aca cag cca cat ccg aat cta aga ccg agg Glu Leu Ala Leu Leu Cys Thr Gln Pro His Pro Asn Leu Arg Pro Arg	540	545	550
1686			
atg tct caa gtg ttg aag gta cta gaa ggt tta gtg gaa cag tgt gaa Met Ser Gln Val Leu Lys Val Leu Glu Gly Leu Val Glu Gln Cys Glu	555	560	565
1734			
gga ggg tat gaa gct aga gct cca agt gtc tct agg aac tac agt aat Gly Gly Tyr Glu Ala Arg Ala Pro Ser Val Ser Arg Asn Tyr Ser Asn	570	575	580
1782			
ggt cat gaa gag cag tcc ttt att att gaa gcc att gag ctc tct gga Gly His Glu Glu Gln Ser Phe Ile Ile Glu Ala Ile Glu Leu Ser Gly	590	595	600
1830			
cca cga tga tagacttcat agtgtcttaa ctagtcttct tgattttgtt			
Pro Arg			
1879			
gtcattgtca tggc			
1893			

<210> 49
<211> 603

P59845PC00 sequence listing

<212> PRT

<213> Arabidopsis thaliana

<400> 49

Met Glu Ile Ser Leu Met Lys Phe Leu Phe Leu Gly Ile Trp Val Tyr
1 5 10 15

Tyr Tyr Ser Val Leu Asp Ser Val Ser Ala Met Asp Ser Leu Leu Ser
20 25 30

Pro Lys Val Ala Ala Leu Met Ser Val Lys Asn Lys Met Lys Asp Glu
35 40 45

Lys Glu Val Leu Ser Gly Trp Asp Ile Asn Ser Val Asp Pro Cys Thr
50 55 60

Trp Asn Met Val Gly Cys Ser Ser Glu Gly Phe Val Val Ser Leu Glu
65 70 75 80

Met Ala Ser Lys Gly Leu Ser Gly Ile Leu Ser Thr Ser Ile Gly Glu
85 90 95

Leu Thr His Leu His Thr Leu Leu Leu Gln Asn Asn Gln Leu Thr Gly
100 105 110

Pro Ile Pro Ser Glu Leu Gly Gln Leu Ser Glu Leu Glu Thr Leu Asp
115 120 125

Leu Ser Gly Asn Arg Phe Ser Gly Glu Ile Pro Ala Ser Leu Gly Phe
130 135 140

Leu Thr His Leu Asn Tyr Leu Arg Leu Ser Arg Asn Leu Leu Ser Gly
145 150 155 160

Gln Val Pro His Leu Val Ala Gly Leu Ser Gly Leu Ser Phe Leu Asp
165 170 175

Leu Ser Phe Asn Asn Leu Ser Gly Pro Thr Pro Asn Ile Ser Ala Lys
180 185 190

Asp Tyr Arg Lys Cys Ile Ser Leu Trp Ser Ser Phe Pro Arg Ala Leu
195 200 205

Leu Arg Cys Tyr Thr Cys Glu Lys Cys Cys Asn Arg Ser Ala Ala Thr
210 215 220

Gly Leu Ser Glu Lys Asp Asn Ser Lys His His Ser Leu Val Leu Ser
225 230 235 240

P59845PC00 sequence listing

Phe Ala Phe Gly Ile Val Val Ala Phe Ile Ile Ser Leu Met Phe Leu
245 250 255

Phe Phe Trp Val Leu Trp His Arg Ser Arg Leu Ser Arg Ser His Val
260 265 270

Gln Gln Asp Tyr Glu Phe Glu Ile Gly His Leu Lys Arg Phe Ser Phe
275 280 285

Arg Glu Ile Gln Thr Ala Thr Ser Asn Phe Ser Pro Lys Asn Ile Leu
290 295 300

Gly Gln Gly Gly Phe Gly Met Val Tyr Lys Gly Tyr Leu Pro Asn Gly
305 310 315 320

Thr Val Val Ala Val Lys Arg Leu Lys Asp Pro Ile Tyr Thr Gly Glu
325 330 335

Val Gln Phe Gln Thr Glu Val Glu Met Ile Gly Leu Ala Val His Arg
340 345 350

Asn Leu Leu Arg Leu Phe Gly Phe Cys Met Thr Pro Glu Glu Arg Met
355 360 365

Leu Val Tyr Pro Tyr Met Pro Asn Gly Ser Val Ala Asp Arg Leu Arg
370 375 380

Asp Trp Asn Arg Arg Ile Ser Ile Ala Leu Gly Ala Ala Arg Gly Leu
385 390 395 400

Val Tyr Leu His Glu Gln Cys Asn Pro Lys Ile Ile His Arg Asp Val
405 410 415

Lys Ala Ala Asn Ile Leu Leu Asp Glu Ser Phe Glu Ala Ile Val Gly
420 425 430

Asp Phe Gly Leu Ala Lys Leu Leu Asp Gln Arg Asp Ser His Val Thr
435 440 445

Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu Ser
450 455 460

Thr Gly Gln Ser Ser Glu Lys Thr Asp Val Phe Gly Phe Gly Val Leu
465 470 475 480

Ile Leu Glu Leu Ile Thr Gly His Lys Met Ile Asp Gln Gly Asn Gly
Page 73

P59845PC00 sequence listing

485

490

495

Gln Val Arg Lys Gly Met Ile Leu Ser Trp Val Arg Thr Leu Lys Ala
500 505 510

Glu Lys Arg Phe Ala Glu Met Val Asp Arg Asp Leu Lys Gly Glu Phe
515 520 525

Asp Asp Leu Val Leu Glu Glu Val Val Glu Leu Ala Leu Leu Cys Thr
530 535 540

Gln Pro His Pro Asn Leu Arg Pro Arg Met Ser Gln Val Leu Lys Val
545 550 555 560

Leu Glu Gly Leu Val Glu Gln Cys Glu Gly Gly Tyr Glu Ala Arg Ala
565 570 575

Pro Ser Val Ser Arg Asn Tyr Ser Asn Gly His Glu Glu Gln Ser Phe
580 585 590

Ile Ile Glu Ala Ile Glu Leu Ser Gly Pro Arg
595 600

<210> 50
<211> 1920
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (61)..(1902)

<400> 50
attgtttcct tcttttggga ttttctcctt ggatggaacc agctcaatta atgagatgag 60
atg aga atg ttc agc ttg cag aag atg gct atg gct ttt act ctc ttg 108
Met Arg Met Phe Ser Leu Gln Lys Met Ala Met Ala Phe Thr Leu Leu
1 5 10 15
ttt ttt gcc tgt tta tgc tca ttt gtg tct cca gat gct caa ggg gat 156
Phe Phe Ala Cys Leu Cys Ser Phe Val Ser Pro Asp Ala Gln Gly Asp
20 25 30
gca ctg ttt gcg ttg agg atc tcc tta cgt gca tta ccg aat cag cta 204
Ala Leu Phe Ala Leu Arg Ile Ser Leu Arg Ala Leu Pro Asn Gln Leu
35 40 45
agt gac tgg aat cag aac caa gtt aat cct tgc act tgg tcc caa gtt 252
Ser Asp Trp Asn Gln Asn Gln Val Asn Pro Cys Thr Trp Ser Gln Val
50 55 60
att tgt gat gac aaa aac ttt gtc act tct ctt aca ttg tca gat atg 300
Ile Cys Asp Asp Lys Asn Phe Val Thr Ser Leu Thr Leu Ser Asp Met
65 70 75 80

P59845PC00 sequence listing

aac ttc tcg gga acc ttg tct tca aga gta gga atc cta gaa aat ctc Asn Phe Ser Gly Thr 85 Leu Ser Ser Arg Val 90 Gly Ile Leu Glu Asn Leu 95	348
aag act ctt act tta aag gga aat gga att acg ggt gaa ata cca gaa Lys Thr Leu Thr 100 Leu Lys Gly Asn 105 Gly Ile Thr Gly Glu Ile Pro Glu 110	396
gac ttt gga aat ctg act agc ttg act agt ttg gat ttg gag gac aat Asp Phe Gly Asn 115 Leu Thr Ser Leu Thr Ser Leu Asp Leu Glu Asp Asn 125	444
cag cta act ggt cgt ata cca tcc act atc ggt aat ctc aag aaa ctt Gln Leu Thr Gly Arg Ile Pro 135 Ser Thr Ile Gly Asn 140 Leu Lys Lys Leu 130	492
cag ttc ttg acc ttg agt agg aac aaa ctt aat ggg act att ccg gag Gln Phe Leu Thr 145 Leu Ser 150 Arg Asn Lys Leu Asn 155 Gly Thr Ile Pro Glu 160	540
tca ctc act ggt ctt cca aac ctg tta aac ctg ctg ctt gat tcc aat Ser Leu Thr Gly Leu 165 Pro Asn Leu Leu Asn 170 Leu Leu Asp Ser Asn 175	588
agt ctc agt ggt cag att cct caa agt ctg ttt gag atc cca aaa tat Ser Leu Ser Gly Gln Ile Pro Gln Ser 185 Leu Phe Glu Ile Pro Lys Tyr 190	636
aat ttc acg tca aac aac ttg aat tgt ggc ggt cgt caa cct cac cct Asn Phe Thr 195 Ser Asn Asn Leu Asn 200 Cys Gly Gly Arg Gln 205 Pro His Pro	684
tgt gta tcc gcg gtt gcc cat tca ggt gat tca agc aag cct aaa act Cys Val Ser Ala Val 210 Ala His 215 Ser Gly Asp Ser Ser 220 Lys Pro Lys Thr	732
ggc att att gct gga gtt gtt gct gga gtt aca gtt gtt ctc ttt gga Gly Ile Ile Ala Gly Val 230 Val Ala Gly Val Thr 235 Val Val Leu Phe Gly 240	780
atc ttg ttg ttt ctg ttc tgc aag gat agg cat aaa gga tat aga cgt Ile Leu Leu Phe 245 Leu Phe Cys Lys Asp Arg 250 His Lys Gly Tyr Arg 255	828
gat gtg ttt gtg gat gtt gca ggt gaa gtg gac agg aga att gca ttt Asp Val Phe Val 260 Asp Val Ala Gly Glu Val 265 Asp Arg Arg Ile Ala Phe 270	876
gga cag ttg aaa agg ttt gca tgg aga gag ctc cag tta gcg aca gat Gly Gln Leu Lys Arg Phe Ala Trp 280 Arg Glu Leu Gln Leu Ala Thr Asp 285	924
aac ttc agc gaa aag aat gta ctt ggt caa gga ggc ttt ggg aaa gtt Asn Phe 290 Ser Glu Lys Asn Val 295 Leu Gly Gln Gly Phe Gly Lys Val	972
tac aaa gga gtg ctt ccg gat aca ccc aaa gtt gct gtg aag aga ttg Tyr Lys Gly Val 305 Pro Asp Thr Pro Lys Val 315 Ala Val Lys Arg Leu 320	1020
acg gat ttc gaa agt cct ggt gga gat gct gct ttc caa agg gaa gta Thr Asp Phe Glu Ser Pro Gly Gly Asp Ala Ala Phe Gln Arg Glu Val	1068

P59845PC00 sequence listing

															325																330																335																	
gag	atg	ata	agt	gta	gct	gtt	cat	agg	aat	cta	ctc	cgt	ctt	atc	ggg	1116	Glu	Met	Ile	Ser	Val	Ala	Val	His	Arg	Asn	Leu	Leu	Arg	Leu	Ile	Gly																																
															340																345																350																	
ttc	tgc	acc	aca	caa	aca	gaa	cgc	ctt	ttg	gtt	tat	ccc	ttc	atg	cag	1164	Phe	Cys	Thr	Thr	Gln	Thr	Glu	Arg	Leu	Leu	Val	Tyr	Pro	Phe	Met	Gln																																
															355																360																365																	
aat	cta	agt	ctt	gca	cat	cgt	ctg	aga	gag	atc	aaa	gca	ggc	gac	ccg	1212	Asn	Leu	Ser	Leu	Ala	His	Arg	Leu	Arg	Glu	Ile	Lys	Ala	Gly	Asp	Pro																																
															370																375																380																	
gtt	cta	gat	tgg	gag	acg	agg	aaa	cgg	att	gcc	tta	gga	gca	gcg	cgt	1260	Val	Leu	Asp	Trp	Glu	Thr	Arg	Lys	Arg	Ile	Ala	Leu	Gly	Ala	Ala	Arg																																
															385																390																395																400	
ggt	ttt	gag	tat	ctt	cat	gaa	cat	tgc	aat	ccg	aag	atc	ata	cat	cgt	1308	Gly	Phe	Glu	Tyr	Leu	His	Glu	His	Cys	Asn	Pro	Lys	Ile	Ile	His	Arg																																
															405																410																415																	
gat	gtg	aaa	gca	gct	aat	gtg	tta	cta	gat	gaa	gat	ttt	gaa	gca	gtg	1356	Asp	Val	Lys	Ala	Ala	Asn	Val	Leu	Leu	Asp	Glu	Asp	Phe	Glu	Ala	Val																																
															420																425																430																	
gtt	ggt	gat	ttt	ggt	tta	gcc	aag	cta	gta	gat	gtt	aga	agg	act	aat	1404	Val	Gly	Asp	Phe	Gly	Leu	Ala	Lys	Leu	Val	Asp	Val	Arg	Arg	Thr	Asn																																
															435																440																445																	
gtg	act	act	caa	gtt	cga	gga	aca	atg	ggt	cac	att	gca	cca	gaa	tat	1452	Val	Thr	Thr	Gln	Val	Arg	Gly	Thr	Met	Gly	His	Ile	Ala	Pro	Glu	Tyr																																
															450																455																460																	
tta	tca	aca	ggg	aaa	tca	tca	gag	aga	acc	gat	gtt	ttc	ggg	tat	gga	1500	Leu	Ser	Thr	Gly	Lys	Ser	Ser	Glu	Arg	Thr	Asp	Val	Phe	Gly	Tyr	Gly																																
															465																470																475																480	
att	atg	ctt	ctt	gag	ctt	gtt	aca	gga	caa	cgc	gca	ata	gac	ttt	tca	1548	Ile	Met	Leu	Leu	Glu	Leu	Val	Thr	Gly	Gln	Arg	Ala	Ile	Asp	Phe	Ser																																
															485																490																495																	
cgt	ttg	gag	gaa	gaa	gat	gat	gtc	ttg	tta	ctt	gac	cac	gtg	aag	aaa	1596	Arg	Leu	Glu	Glu	Glu	Asp	Asp	Val	Leu	Leu	Leu	Asp	His	Val	Lys	Lys																																
															500																505																510																	
ctg	gaa	aga	gag	aag	aga	tta	gga	gca	atc	gta	gat	aag	aat	ttg	gat	1644	Leu	Glu	Arg	Glu	Lys	Arg	Leu	Gly	Ala	Ile	Val	Asp	Lys	Asn	Leu	Asp																																
															515																520																525																	
gga	gag	tat	ata	aaa	gaa	gaa	gta	gag	atg	atg	ata	caa	gtg	gct	ttg	1692	Gly	Glu	Tyr	Ile	Lys	Glu	Glu	Val	Glu	Met	Met	Ile	Gln	Val	Ala	Leu																																
															530																535																540																	
ctt	tgt	aca	caa	ggt	tca	cca	gaa	gac	cga	cca	gtg	atg	tct	gaa	gtt	1740	Leu	Cys	Thr	Gln	Gly	Ser	Pro	Glu	Asp	Arg	Pro	Val	Met	Ser	Glu	Val																																
															545																550																555																560	
gtg	agg	atg	tta	gaa	gga	gaa	ggg	ctt	gcg	gag	aga	tgg	gaa	gag	tgg	1788	Val	Arg	Met	Leu	Glu	Gly	Glu	Gly	Leu	Ala	Glu	Arg	Trp	Glu	Glu	Trp																																
															565																570																575																	
caa	aac	gtg	gaa	gtc	acg	aga	cgt	cat	gag	ttt	gaa	cgg	ttg	cag	agg	1836																																																

P59845PC00 sequence listing

Gln Asn Val Glu Val Thr Arg Arg His Glu Phe Glu Arg Leu Gln Arg
580 585 590

aga ttt gat tgg ggt gaa gat tct atg cat aac caa gat gcc att gaa 1884
Arg Phe Asp Trp Gly Glu Asp Ser Met His Asn Gln Asp Ala Ile Glu
595 600 605

tta tct ggt gga aga tga ccaaaaacat caaacctt 1920
Leu Ser Gly Gly Arg
610

<210> 51
<211> 613
<212> PRT
<213> Arabidopsis thaliana

<400> 51

Met Arg Met Phe Ser Leu Gln Lys Met Ala Met Ala Phe Thr Leu Leu
1 5 10 15

Phe Phe Ala Cys Leu Cys Ser Phe Val Ser Pro Asp Ala Gln Gly Asp
20 25 30

Ala Leu Phe Ala Leu Arg Ile Ser Leu Arg Ala Leu Pro Asn Gln Leu
35 40 45

Ser Asp Trp Asn Gln Asn Gln Val Asn Pro Cys Thr Trp Ser Gln Val
50 55 60

Ile Cys Asp Asp Lys Asn Phe Val Thr Ser Leu Thr Leu Ser Asp Met
65 70 75 80

Asn Phe Ser Gly Thr Leu Ser Ser Arg Val Gly Ile Leu Glu Asn Leu
85 90 95

Lys Thr Leu Thr Leu Lys Gly Asn Gly Ile Thr Gly Glu Ile Pro Glu
100 105 110

Asp Phe Gly Asn Leu Thr Ser Leu Thr Ser Leu Asp Leu Glu Asp Asn
115 120 125

Gln Leu Thr Gly Arg Ile Pro Ser Thr Ile Gly Asn Leu Lys Lys Leu
130 135 140

Gln Phe Leu Thr Leu Ser Arg Asn Lys Leu Asn Gly Thr Ile Pro Glu
145 150 155 160

Ser Leu Thr Gly Leu Pro Asn Leu Leu Asn Leu Leu Leu Asp Ser Asn
165 170 175

P59845PC00 sequence listing

Ser Leu Ser Gly Gln Ile Pro Gln Ser Leu Phe Glu Ile Pro Lys Tyr
180 185 190

Asn Phe Thr Ser Asn Asn Leu Asn Cys Gly Gly Arg Gln Pro His Pro
195 200 205

Cys Val Ser Ala Val Ala His Ser Gly Asp Ser Ser Lys Pro Lys Thr
210 215 220

Gly Ile Ile Ala Gly Val Val Ala Gly Val Thr Val Val Leu Phe Gly
225 230 235 240

Ile Leu Leu Phe Leu Phe Cys Lys Asp Arg His Lys Gly Tyr Arg Arg
245 250 255

Asp Val Phe Val Asp Val Ala Gly Glu Val Asp Arg Arg Ile Ala Phe
260 265 270

Gly Gln Leu Lys Arg Phe Ala Trp Arg Glu Leu Gln Leu Ala Thr Asp
275 280 285

Asn Phe Ser Glu Lys Asn Val Leu Gly Gln Gly Gly Phe Gly Lys Val
290 295 300

Tyr Lys Gly Val Leu Pro Asp Thr Pro Lys Val Ala Val Lys Arg Leu
305 310 315 320

Thr Asp Phe Glu Ser Pro Gly Gly Asp Ala Ala Phe Gln Arg Glu Val
325 330 335

Glu Met Ile Ser Val Ala Val His Arg Asn Leu Leu Arg Leu Ile Gly
340 345 350

Phe Cys Thr Thr Gln Thr Glu Arg Leu Leu Val Tyr Pro Phe Met Gln
355 360 365

Asn Leu Ser Leu Ala His Arg Leu Arg Glu Ile Lys Ala Gly Asp Pro
370 375 380

Val Leu Asp Trp Glu Thr Arg Lys Arg Ile Ala Leu Gly Ala Ala Arg
385 390 395 400

Gly Phe Glu Tyr Leu His Glu His Cys Asn Pro Lys Ile Ile His Arg
405 410 415

Asp Val Lys Ala Ala Asn Val Leu Leu Asp Glu Asp Phe Glu Ala Val
420 425 430

P59845PC00 sequence listing

Val Gly Asp Phe Gly Leu Ala Lys Leu Val Asp Val Arg Arg Thr Asn
435 440 445

Val Thr Thr Gln Val Arg Gly Thr Met Gly His Ile Ala Pro Glu Tyr
450 455 460

Leu Ser Thr Gly Lys Ser Ser Glu Arg Thr Asp Val Phe Gly Tyr Gly
465 470 475 480

Ile Met Leu Leu Glu Leu Val Thr Gly Gln Arg Ala Ile Asp Phe Ser
485 490 495

Arg Leu Glu Glu Glu Asp Asp Val Leu Leu Leu Asp His Val Lys Lys
500 505 510

Leu Glu Arg Glu Lys Arg Leu Gly Ala Ile Val Asp Lys Asn Leu Asp
515 520 525

Gly Glu Tyr Ile Lys Glu Glu Val Glu Met Met Ile Gln Val Ala Leu
530 535 540

Leu Cys Thr Gln Gly Ser Pro Glu Asp Arg Pro Val Met Ser Glu Val
545 550 555 560

Val Arg Met Leu Glu Gly Glu Gly Leu Ala Glu Arg Trp Glu Glu Trp
565 570 575

Gln Asn Val Glu Val Thr Arg Arg His Glu Phe Glu Arg Leu Gln Arg
580 585 590

Arg Phe Asp Trp Gly Glu Asp Ser Met His Asn Gln Asp Ala Ile Glu
595 600 605

Leu Ser Gly Gly Arg
610

<210> 52
<211> 2217
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (36)..(1952)

<400> 52
acatcttggt ttctgctcat tcctctgttt caaca atg gag agt act att gtt
Met Glu Ser Thr Ile Val
1 5

53

P59845PC00 sequence listing

atg atg atg atg ata aca aga tct ttc ttt tgc ttc ttg gga ttt tta	101
Met Met Met Met Ile Thr Arg Ser Phe Phe Cys Phe Leu Gly Phe Leu	
10 15 20	
tgc ctt ctc tgc tct tct gtt cac gga ttg ctt tct cct aaa ggt gtt	149
Cys Leu Leu Cys Ser Ser Val His Gly Leu Leu Ser Pro Lys Gly Val	
25 30 35	
aac ttt gaa gtg caa gct ttg atg gac ata aaa gct tca tta cat gat	197
Asn Phe Glu Val Gln Ala Leu Met Asp Ile Lys Ala Ser Leu His Asp	
40 45 50	
cct cat ggt gtt ctt gat aac tgg gat aga gat gct gtt gat cct tgt	245
Pro His Gly Val Leu Asp Asn Trp Asp Arg Asp Ala Val Asp Pro Cys	
55 60 65 70	
agt tgg aca atg gtc act tgt tct tct gaa aac ttt gtc att ggc tta	293
Ser Trp Thr Met Val Thr Cys Ser Ser Glu Asn Phe Val Ile Gly Leu	
75 80 85	
ggc aca cca agt cag aat tta tct ggt aca cta tct cca agc att acc	341
Gly Thr Pro Ser Gln Asn Leu Ser Gly Thr Leu Ser Pro Ser Ile Thr	
90 95 100	
aac tta aca aat ctt cgg att gtg ctg ttg cag aac aac aac ata aaa	389
Asn Leu Thr Asn Leu Arg Ile Val Leu Leu Gln Asn Asn Asn Ile Lys	
105 110 115	
gga aaa att cct gct gag att ggt cgg ctt acg agg ctt gag act ctt	437
Gly Lys Ile Pro Ala Glu Ile Gly Arg Leu Thr Arg Leu Glu Thr Leu	
120 125 130	
gat ctt tct gat aat ttc ttc cac ggt gaa att cct ttt tca gta ggc	485
Asp Leu Ser Asp Asn Phe Phe His Gly Glu Ile Pro Phe Ser Val Gly	
135 140 145 150	
tat cta caa agc ctg caa tat ctg agg ctt aac aac aat tct ctc tct	533
Tyr Leu Gln Ser Leu Gln Tyr Leu Arg Leu Asn Asn Asn Ser Leu Ser	
155 160 165	
gga gtg ttt cct ctg tca cta tct aat atg act caa ctt gcc ttt ctt	581
Gly Val Phe Pro Leu Ser Leu Ser Asn Met Thr Gln Leu Ala Phe Leu	
170 175 180	
gat tta tca tac aac aat ctt agt ggt cct gtt cca aga ttt gct gca	629
Asp Leu Ser Tyr Asn Asn Leu Ser Gly Pro Val Pro Arg Phe Ala Ala	
185 190 195	
aag acg ttt agc atc gtt ggg aac ccg ctg ata tgt cca acg ggt acc	677
Lys Thr Phe Ser Ile Val Gly Asn Pro Leu Ile Cys Pro Thr Gly Thr	
200 205 210	
gaa cca gac tgc aat gga aca aca ttg ata cct atg tct atg aac ttg	725
Glu Pro Asp Cys Asn Gly Thr Thr Leu Ile Pro Met Ser Met Asn Leu	
215 220 225 230	
aat caa act gga gtt cct tta tac gcc ggt gga tcg agg aat cac aaa	773
Asn Gln Thr Gly Val Pro Leu Tyr Ala Gly Gly Ser Arg Asn His Lys	
235 240 245	
atg gca atc gct gtt gga tcc agc gtt ggg act gta tca tta atc ttc	821
Met Ala Ile Ala Val Gly Ser Ser Val Gly Thr Val Ser Leu Ile Phe	

P59845PC00 sequence listing

250	255	260	
att gct gtt ggt ttg ttt ctc tgg tgg aga caa aga cat aac caa aac Ile Ala Val Gly Leu Phe Leu Trp Trp Arg Gln Arg His Asn Gln Asn 265 270 275			869
aca ttc ttt gat gtt aaa gat ggg aat cat cat gag gaa gtt tca ctt Thr Phe Phe Asp Val Lys Asp Gly Asn His His Glu Glu Val Ser Leu 280 285 290			917
gga aac ctg agg aga ttt ggt ttc agg gag ctt cag att gcg acc aat Gly Asn Leu Arg Arg Phe Gly Phe Arg Glu Leu Gln Ile Ala Thr Asn 295 300 305 310			965
aac ttc agc agt aag aac tta ttg ggg aaa ggt ggc tat gga aat gta Asn Phe Ser Ser Lys Asn Leu Leu Gly Lys Gly Gly Tyr Gly Asn Val 315 320 325			1013
tac aaa gga ata ctt gga gat agt aca gtg gtt gca gtg aaa agg ctt Tyr Lys Gly Ile Leu Gly Asp Ser Thr Val Val Ala Val Lys Arg Leu 330 335 340			1061
aaa gat gga gga gca ttg gga gga gag att cag ttt cag aca gaa gtt Lys Asp Gly Gly Ala Leu Gly Gly Glu Ile Gln Phe Gln Thr Glu Val 345 350 355			1109
gaa atg atc agt tta gct gtt cat cga aat ctc tta aga ctc tac ggt Glu Met Ile Ser Leu Ala Val His Arg Asn Leu Leu Arg Leu Tyr Gly 360 365 370			1157
ttc tgc atc aca caa act gag aag ctt cta gtt tat cct tat atg tct Phe Cys Ile Thr Gln Thr Glu Lys Leu Leu Val Tyr Pro Tyr Met Ser 375 380 385 390			1205
aat gga agc gtt gca tct cga atg aaa gca aaa cct gtt ctt gac tgg Asn Gly Ser Val Ala Ser Arg Met Lys Ala Lys Pro Val Leu Asp Trp 395 400 405			1253
agc ata agg aag agg ata gcc ata gga gct gca aga ggg ctt gtg tat Ser Ile Arg Lys Arg Ile Ala Ile Gly Ala Ala Arg Gly Leu Val Tyr 410 415 420			1301
ctc cat gag caa tgt gat ccg aag att atc cac cgc gat gtc aaa gca Leu His Glu Gln Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala 425 430 435			1349
gcg aat ata ctt ctt gat gac tac tgt gaa gct gtg gtt ggc gat ttt Ala Asn Ile Leu Leu Asp Asp Tyr Cys Glu Ala Val Val Gly Asp Phe 440 445 450			1397
ggt tta gct aaa ctc ttg gat cat caa gat tct cat gtg aca acc gcg Gly Leu Ala Lys Leu Leu Asp His Gln Asp Ser His Val Thr Thr Ala 455 460 465 470			1445
gtt aga ggc acg gtg ggt cac att gct cca gag tat ctc tca act ggt Val Arg Gly Thr Val Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly 475 480 485			1493
caa tcc tct gag aaa aca gat gtt ttt ggc ttc ggg att ctt ctt ctt Gln Ser Ser Glu Lys Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu 490 495 500			1541
gag ctt gta acc gga caa aga gct ttt gag ttt ggt aaa gcg gct aac			1589

P59845PC00 sequence listing

Glu	Leu	Val	Thr	Gly	Gln	Arg	Ala	Phe	Glu	Phe	Gly	Lys	Ala	Ala	Asn		
		505					510					515					
cag	aaa	ggt	gtg	atg	ctt	gat	tgg	ggt	aaa	aag	att	cat	caa	gag	aag	1637	
Gln	Lys	Gly	Val	Met	Leu	Asp	Trp	Val	Lys	Lys	Ile	His	Gln	Glu	Lys		
	520					525					530						
aaa	ctt	gag	cta	ctt	gtg	gat	aaa	gag	ttg	ttg	aag	aag	aag	agc	tac	1685	
Lys	Leu	Glu	Leu	Leu	Val	Asp	Lys	Glu	Leu	Leu	Lys	Lys	Lys	Ser	Tyr		
	535				540					545					550		
gat	gag	att	gag	tta	gac	gaa	atg	gta	aga	gta	gct	ttg	ttg	tgc	aca	1733	
Asp	Glu	Ile	Glu	Leu	Asp	Glu	Met	Val	Arg	Val	Ala	Leu	Leu	Cys	Thr		
				555					560					565			
cag	tac	ctg	cca	gga	cat	aga	cca	aaa	atg	tct	gaa	ggt	ggt	cga	atg	1781	
Gln	Tyr	Leu	Pro	Gly	His	Arg	Pro	Lys	Met	Ser	Glu	Val	Val	Arg	Met		
			570					575					580				
ctg	gaa	gga	gat	gga	ctt	gca	gag	aaa	tgg	gaa	gct	tct	caa	aga	tca	1829	
Leu	Glu	Gly	Asp	Gly	Leu	Ala	Glu	Lys	Trp	Glu	Ala	Ser	Gln	Arg	Ser		
		585					590					595					
gac	agt	ggt	tca	aaa	tgt	agc	aac	agg	ata	aat	gaa	ttg	atg	tca	tct	1877	
Asp	Ser	Val	Ser	Lys	Cys	Ser	Asn	Arg	Ile	Asn	Glu	Leu	Met	Ser	Ser		
	600					605					610						
tca	gac	aga	tac	tct	gat	ctt	acc	gat	gac	tct	agt	tta	ctt	gtg	caa	1925	
Ser	Asp	Arg	Tyr	Ser	Asp	Leu	Thr	Asp	Asp	Ser	Ser	Leu	Leu	Val	Gln		
	615				620					625					630		
gca	atg	gag	ctc	tct	ggt	cct	aga	tga	aatctataca	tgaatctgaa						1972	
Ala	Met	Glu	Leu	Ser	Gly	Pro	Arg										
				635													
gaagaagaag	aacatgcatc	tgtttcttga	atcaagaggg	attcttggtt	ttttgtataa											2032	
tagagagggt	ttttggaggg	aaatggtgtg	tctctgtaac	tgtataggct	tgttgtgtaa											2092	
gaagttatta	ctgcacttag	ggttaattca	aagttcttta	cataaaaaat	gattagttgc											2152	
gttgaataga	gggaacactt	tgggagat	tttcatgtatgaa	atttggaaaa	aaaaaaaaaa											2212	
aaaaa																2217	

<210> 53
 <211> 638
 <212> PRT
 <213> Arabidopsis thaliana

<400> 53

Met	Glu	Ser	Thr	Ile	Val	Met	Met	Met	Met	Ile	Thr	Arg	Ser	Phe	Phe
1				5					10					15	

Cys	Phe	Leu	Gly	Phe	Leu	Cys	Leu	Leu	Cys	Ser	Ser	Val	His	Gly	Leu
		20					25						30		

Leu	Ser	Pro	Lys	Gly	Val	Asn	Phe	Glu	Val	Gln	Ala	Leu	Met	Asp	Ile
		35					40					45			

P59845PC00 sequence listing

Lys Ala Ser Leu His Asp Pro His Gly Val Leu Asp Asn Trp Asp Arg
 50 55 60
 Asp Ala Val Asp Pro Cys Ser Trp Thr Met Val Thr Cys Ser Ser Glu
 65 70 75 80
 Asn Phe Val Ile Gly Leu Gly Thr Pro Ser Gln Asn Leu Ser Gly Thr
 85 90 95
 Leu Ser Pro Ser Ile Thr Asn Leu Thr Asn Leu Arg Ile Val Leu Leu
 100 105 110
 Gln Asn Asn Asn Ile Lys Gly Lys Ile Pro Ala Glu Ile Gly Arg Leu
 115 120 125
 Thr Arg Leu Glu Thr Leu Asp Leu Ser Asp Asn Phe Phe His Gly Glu
 130 135 140
 Ile Pro Phe Ser Val Gly Tyr Leu Gln Ser Leu Gln Tyr Leu Arg Leu
 145 150 155 160
 Asn Asn Asn Ser Leu Ser Gly Val Phe Pro Leu Ser Leu Ser Asn Met
 165 170 175
 Thr Gln Leu Ala Phe Leu Asp Leu Ser Tyr Asn Asn Leu Ser Gly Pro
 180 185 190
 Val Pro Arg Phe Ala Ala Lys Thr Phe Ser Ile Val Gly Asn Pro Leu
 195 200 205
 Ile Cys Pro Thr Gly Thr Glu Pro Asp Cys Asn Gly Thr Thr Leu Ile
 210 215 220
 Pro Met Ser Met Asn Leu Asn Gln Thr Gly Val Pro Leu Tyr Ala Gly
 225 230 235 240
 Gly Ser Arg Asn His Lys Met Ala Ile Ala Val Gly Ser Ser Val Gly
 245 250 255
 Thr Val Ser Leu Ile Phe Ile Ala Val Gly Leu Phe Leu Trp Trp Arg
 260 265 270
 Gln Arg His Asn Gln Asn Thr Phe Phe Asp Val Lys Asp Gly Asn His
 275 280 285
 His Glu Glu Val Ser Leu Gly Asn Leu Arg Arg Phe Gly Phe Arg Glu
 Page 83

290 P59845PC00 sequence listing 300

Leu Gln Ile Ala Thr Asn Asn Phe Ser Ser Lys Asn Leu Leu Gly Lys
 305 310 315 320
 Gly Gly Tyr Gly Asn Val Tyr Lys Gly Ile Leu Gly Asp Ser Thr Val
 325 330 335
 Val Ala Val Lys Arg Leu Lys Asp Gly Gly Ala Leu Gly Gly Glu Ile
 340 345 350
 Gln Phe Gln Thr Glu Val Glu Met Ile Ser Leu Ala Val His Arg Asn
 355 360 365
 Leu Leu Arg Leu Tyr Gly Phe Cys Ile Thr Gln Thr Glu Lys Leu Leu
 370 375 380
 Val Tyr Pro Tyr Met Ser Asn Gly Ser Val Ala Ser Arg Met Lys Ala
 385 390 395 400
 Lys Pro Val Leu Asp Trp Ser Ile Arg Lys Arg Ile Ala Ile Gly Ala
 405 410 415
 Ala Arg Gly Leu Val Tyr Leu His Glu Gln Cys Asp Pro Lys Ile Ile
 420 425 430
 His Arg Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Asp Tyr Cys Glu
 435 440 445
 Ala Val Val Gly Asp Phe Gly Leu Ala Lys Leu Leu Asp His Gln Asp
 450 455 460
 Ser His Val Thr Thr Ala Val Arg Gly Thr Val Gly His Ile Ala Pro
 465 470 475 480
 Glu Tyr Leu Ser Thr Gly Gln Ser Ser Glu Lys Thr Asp Val Phe Gly
 485 490 495
 Phe Gly Ile Leu Leu Leu Glu Leu Val Thr Gly Gln Arg Ala Phe Glu
 500 505 510
 Phe Gly Lys Ala Ala Asn Gln Lys Gly Val Met Leu Asp Trp Val Lys
 515 520 525
 Lys Ile His Gln Glu Lys Lys Leu Glu Leu Leu Val Asp Lys Glu Leu
 530 535 540

P59845PC00 sequence listing

Leu Lys Lys Lys Ser Tyr Asp Glu Ile Glu Leu Asp Glu Met Val Arg
545 550 555 560

Val Ala Leu Leu Cys Thr Gln Tyr Leu Pro Gly His Arg Pro Lys Met
565 570 575

Ser Glu Val Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Lys Trp
580 585 590

Glu Ala Ser Gln Arg Ser Asp Ser Val Ser Lys Cys Ser Asn Arg Ile
595 600 605

Asn Glu Leu Met Ser Ser Ser Asp Arg Tyr Ser Asp Leu Thr Asp Asp
610 615 620

Ser Ser Leu Leu Val Gln Ala Met Glu Leu Ser Gly Pro Arg
625 630 635

<210> 54
<211> 2021
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (61)..(1947)

<400> 54
gttttttttt ttttaccctc ttggaggatc tgggaggaga aatttgcttt tttttggttaa 60
atg ggg aga aaa aag ttt gaa gct ttt ggt ttt gtc tgc tta atc tca 108
Met Gly Arg Lys Lys Phe Glu Ala Phe Gly Phe Val Cys Leu Ile Ser
1 5 10 15
ctg ctt ctt ctg ttt aat tcg tta tgg ctt gcc tct tct aac atg gaa 156
Leu Leu Leu Leu Phe Asn Ser Leu Trp Leu Ala Ser Ser Asn Met Glu
20 25 30
ggt gat gca ctg cac agt ttg aga gct aat cta gtt gat cca aat aat 204
Gly Asp Ala Leu His Ser Leu Arg Ala Asn Leu Val Asp Pro Asn Asn
35 40 45
gtc ttg caa agc tgg gat cct acg ctt gtt aat ccg tgt act tgg ttt 252
Val Leu Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe
50 55 60
cac gta acg tgt aac aac gag aac agt gtt ata aga gtc gat ctt ggg 300
His Val Thr Cys Asn Asn Glu Asn Ser Val Ile Arg Val Asp Leu Gly
65 70 75 80
aat gca gac ttg tct ggt cag ttg gtt cct cag cta ggt cag ctc aag 348
Asn Ala Asp Leu Ser Gly Gln Leu Val Pro Gln Leu Gly Gln Leu Lys
85 90 95
aac ttg cag tac ttg gag ctt tat agt aat aac ata acc ggg ccg gtt 396
Asn Leu Gln Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Pro Val
Page 85

P59845PC00 sequence listing

100	105	110	
cca agc gat ctt ggg aat ctg aca aac tta gtg agc ttg gat ctt tac Pro Ser Asp Leu Gly Asn Leu Thr Asn Leu Val Ser Leu Asp Leu Tyr 115 120 125			444
ttg aac agc ttc act ggt cca att cca gat tct cta gga aag cta ttc Leu Asn Ser Phe Thr Gly Pro Ile Pro Asp Ser Leu Gly Lys Leu Phe 130 135 140			492
aag ctt cgc ttt ctt cgg ctc aac aat aac agt ctc acc gga cca att Lys Leu Arg Phe Leu Arg Leu Asn Asn Asn Ser Leu Thr Gly Pro Ile 145 150 155 160			540
ccc atg tca ttg act aat atc atg acc ctt caa gtt ttg gat ctg tcg Pro Met Ser Leu Thr Asn Ile Met Thr Leu Gln Val Leu Asp Leu Ser 165 170 175			588
aac aac cga tta tcc gga tct gtt cct gat aat ggt tcc ttc tcg ctc Asn Asn Arg Leu Ser Gly Ser Val Pro Asp Asn Gly Ser Phe Ser Leu 180 185 190			636
ttc act ccc atc agt ttt gct aac aac ttg gat cta tgc ggc cca gtt Phe Thr Pro Ile Ser Phe Ala Asn Asn Leu Asp Leu Cys Gly Pro Val 195 200 205			684
act agc cgt cct tgt cct gga tct ccc ccg ttt tct cct cca cca cct Thr Ser Arg Pro Cys Pro Gly Ser Pro Pro Phe Ser Pro Pro Pro Pro 210 215 220			732
ttt ata cca cct ccc ata gtt cct aca cca ggt ggg tat agt gct act Phe Ile Pro Pro Pro Ile Val Pro Thr Pro Gly Gly Tyr Ser Ala Thr 225 230 235 240			780
gga gcc att gcg gga gga gtt gct gct ggt gct gct tta cta ttt gct Gly Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Leu Phe Ala 245 250 255			828
gcc cct gct tta gct ttt gct tgg tgg cgt aga aga aaa cct caa gaa Ala Pro Ala Leu Ala Phe Ala Trp Trp Arg Arg Arg Lys Pro Gln Glu 260 265 270			876
ttc ttc ttt gat gtt cct gcc gaa gag gac cct gag gtt cac ttg ggg Phe Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly 275 280 285			924
cag ctt aag cgg ttc tct cta cgg gaa ctt caa gta gca act gat agc Gln Leu Lys Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Thr Asp Ser 290 295 300			972
ttc agc aac aag aac att ttg ggc cga ggt ggg ttc gga aaa gtc tac Phe Ser Asn Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr 305 310 315 320			1020
aaa ggc cgt ctt gct gat gga aca ctt gtt gca gtc aaa cgg ctt aaa Lys Gly Arg Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys 325 330 335			1068
gaa gag cga acc cca ggt ggc gag ctc cag ttt cag aca gaa gtg gag Glu Glu Arg Thr Pro Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu 340 345 350			1116
atg ata agc atg gcc gtt cac aga aat ctc ctc agg cta cgc ggt ttc			1164

P59845PC00 sequence listing

Met	Ile	Ser	Met	Ala	Val	His	Arg	Asn	Leu	Leu	Arg	Leu	Arg	Gly	Phe		
		355					360					365					
tgt	atg	acc	cct	acc	gag	aga	ttg	ctt	gtt	tat	cct	tac	atg	gct	aat	1212	
Cys	Met	Thr	Pro	Thr	Glu	Arg	Leu	Leu	Val	Tyr	Pro	Tyr	Met	Ala	Asn		
	370					375					380						
gga	agt	gtc	gct	tcc	tgt	ttg	aga	gaa	cgt	cca	cca	tca	cag	ttg	cct	1260	
Gly	Ser	Val	Ala	Ser	Cys	Leu	Arg	Glu	Arg	Pro	Pro	Ser	Gln	Leu	Pro		
	385				390					395					400		
cta	gcc	tgg	tca	ata	aga	cag	caa	atc	gcg	cta	gga	tca	gcg	agg	ggt	1308	
Leu	Ala	Trp	Ser	Ile	Arg	Gln	Gln	Ile	Ala	Leu	Gly	Ser	Ala	Arg	Gly		
				405					410					415			
ttg	tct	tat	ctt	cat	gat	cat	tgc	gac	ccc	aaa	att	att	cac	cgt	gat	1356	
Leu	Ser	Tyr	Leu	His	Asp	His	Cys	Asp	Pro	Lys	Ile	Ile	His	Arg	Asp		
			420					425					430				
gtg	aaa	gct	gct	aat	att	ctg	ttg	gac	gag	gaa	ttt	gag	gcg	gtg	gta	1404	
Val	Lys	Ala	Ala	Asn	Ile	Leu	Leu	Asp	Glu	Glu	Phe	Glu	Ala	Val	Val		
		435					440					445					
ggt	gat	ttc	ggg	tta	gct	aga	ctt	atg	gac	tat	aaa	gat	act	cat	gtc	1452	
Gly	Asp	Phe	Gly	Leu	Ala	Arg	Leu	Met	Asp	Tyr	Lys	Asp	Thr	His	Val		
	450					455					460						
aca	acg	gct	gtg	cgt	ggg	act	att	gga	cac	att	gct	cct	gag	tat	ctc	1500	
Thr	Thr	Ala	Val	Arg	Gly	Thr	Ile	Gly	His	Ile	Ala	Pro	Glu	Tyr	Leu		
					470					475					480		
tca	act	gga	aaa	tct	tca	gag	aaa	act	gat	gtt	ttt	ggc	tac	ggg	atc	1548	
Ser	Thr	Gly	Lys	Ser	Ser	Glu	Lys	Thr	Asp	Val	Phe	Gly	Tyr	Gly	Ile		
				485					490					495			
atg	ctt	ttg	gaa	ctg	att	aca	ggt	cag	aga	gct	ttt	gat	ctt	gca	aga	1596	
Met	Leu	Leu	Glu	Leu	Ile	Thr	Gly	Gln	Arg	Ala	Phe	Asp	Leu	Ala	Arg		
			500					505					510				
ctg	gcg	aat	gac	gat	gac	gtt	atg	ctc	cta	gat	tgg	gtg	aaa	ggg	ctt	1644	
Leu	Ala	Asn	Asp	Asp	Asp	Val	Met	Leu	Leu	Asp	Trp	Val	Lys	Gly	Leu		
		515					520					525					
ttg	aag	gag	aag	aag	ctg	gag	atg	ctt	gtg	gat	cct	gac	ctg	caa	agc	1692	
Leu	Lys	Glu	Lys	Lys	Leu	Glu	Met	Leu	Val	Asp	Pro	Asp	Leu	Gln	Ser		
	530					535					540						
aat	tac	aca	gaa	gca	gaa	gta	gaa	cag	ctc	ata	caa	gtg	gct	ctt	ctc	1740	
Asn	Tyr	Thr	Glu	Ala	Glu	Val	Glu	Gln	Leu	Ile	Gln	Val	Ala	Leu	Leu		
	545				550					555					560		
tgc	aca	cag	agc	tca	cct	atg	gaa	cga	cct	aag	atg	tct	gag	gtt	gtt	1788	
Cys	Thr	Gln	Ser	Ser	Pro	Met	Glu	Arg	Pro	Lys	Met	Ser	Glu	Val	Val		
				565					570					575			
cga	atg	ctt	gaa	ggt	gac	ggt	tta	gcg	gag	aaa	tgg	gac	gag	tgg	cag	1836	
Arg	Met	Leu	Glu	Gly	Asp	Gly	Leu	Ala	Glu	Lys	Trp	Asp	Glu	Trp	Gln		
			580					585					590				
aaa	gtg	gaa	gtt	ctc	agg	caa	gaa	gtg	gag	ctc	tct	tct	cac	ccc	acc	1884	
Lys	Val	Glu	Val	Leu	Arg	Gln	Glu	Val	Glu	Leu	Ser	Ser	His	Pro	Thr		
		595					600					605					

P59845PC00 sequence listing

tct gac tgg atc ctt gat tcg act gat aat ctt cat gct atg gag ttg 1932
Ser Asp Trp Ile Leu Asp Ser Thr Asp Asn Leu His Ala Met Glu Leu
610 615 620

tct ggt cca aga taa acgacattgt aatttgccta acagaaaaga gaaagaacag 1987
Ser Gly Pro Arg
625

agaaatatta agagaatcac ttctctgtat tctt 2021

<210> 55
<211> 628
<212> PRT
<213> Arabidopsis thaliana

<400> 55

Met Gly Arg Lys Lys Phe Glu Ala Phe Gly Phe Val Cys Leu Ile Ser
1 5 10 15

Leu Leu Leu Leu Phe Asn Ser Leu Trp Leu Ala Ser Ser Asn Met Glu
20 25 30

Gly Asp Ala Leu His Ser Leu Arg Ala Asn Leu Val Asp Pro Asn Asn
35 40 45

Val Leu Gln Ser Trp Asp Pro Thr Leu Val Asn Pro Cys Thr Trp Phe
50 55 60

His Val Thr Cys Asn Asn Glu Asn Ser Val Ile Arg Val Asp Leu Gly
65 70 75 80

Asn Ala Asp Leu Ser Gly Gln Leu Val Pro Gln Leu Gly Gln Leu Lys
85 90 95

Asn Leu Gln Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Pro Val
100 105 110

Pro Ser Asp Leu Gly Asn Leu Thr Asn Leu Val Ser Leu Asp Leu Tyr
115 120 125

Leu Asn Ser Phe Thr Gly Pro Ile Pro Asp Ser Leu Gly Lys Leu Phe
130 135 140

Lys Leu Arg Phe Leu Arg Leu Asn Asn Asn Ser Leu Thr Gly Pro Ile
145 150 155 160

Pro Met Ser Leu Thr Asn Ile Met Thr Leu Gln Val Leu Asp Leu Ser
165 170 175

Asn Asn Arg Leu Ser Gly Ser Val Pro Asp Asn Gly Ser Phe Ser Leu
Page 88

P59845PC00 sequence listing

180		185		190
Phe Thr Pro Ile Ser Phe Ala Asn Asn Leu Asp Leu Cys Gly Pro Val	195	200	205	
Thr Ser Arg Pro Cys Pro Gly Ser Pro Pro Phe Ser Pro Pro Pro Pro	210	215	220	
Phe Ile Pro Pro Pro Ile Val Pro Thr Pro Gly Gly Tyr Ser Ala Thr	225	230	235	240
Gly Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Leu Phe Ala	245	250	255	
Ala Pro Ala Leu Ala Phe Ala Trp Trp Arg Arg Arg Lys Pro Gln Glu	260	265	270	
Phe Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly	275	280	285	
Gln Leu Lys Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Thr Asp Ser	290	295	300	
Phe Ser Asn Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr	305	310	315	320
Lys Gly Arg Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys	325	330	335	
Glu Glu Arg Thr Pro Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu	340	345	350	
Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe	355	360	365	
Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn	370	375	380	
Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Pro Ser Gln Leu Pro	385	390	395	400
Leu Ala Trp Ser Ile Arg Gln Gln Ile Ala Leu Gly Ser Ala Arg Gly	405	410	415	
Leu Ser Tyr Leu His Asp His Cys Asp Pro Lys Ile Ile His Arg Asp	420	425	430	

P59845PC00 sequence listing

Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val
435 440 445

Gly Asp Phe Gly Leu Ala Arg Leu Met Asp Tyr Lys Asp Thr His Val
450 455 460

Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu
465 470 475 480

Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Ile
485 490 495

Met Leu Leu Glu Leu Ile Thr Gly Gln Arg Ala Phe Asp Leu Ala Arg
500 505 510

Leu Ala Asn Asp Asp Asp Val Met Leu Leu Asp Trp Val Lys Gly Leu
515 520 525

Leu Lys Glu Lys Lys Leu Glu Met Leu Val Asp Pro Asp Leu Gln Ser
530 535 540

Asn Tyr Thr Glu Ala Glu Val Glu Gln Leu Ile Gln Val Ala Leu Leu
545 550 555 560

Cys Thr Gln Ser Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val Val
565 570 575

Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Lys Trp Asp Glu Trp Gln
580 585 590

Lys Val Glu Val Leu Arg Gln Glu Val Glu Leu Ser Ser His Pro Thr
595 600 605

Ser Asp Trp Ile Leu Asp Ser Thr Asp Asn Leu His Ala Met Glu Leu
610 615 620

Ser Gly Pro Arg
625

<210> 56
<211> 1992
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (79)..(1926)

<400> 56

P59845PC00 sequence listing

atcagggggtt ttaacaatga tggattttct ctgatgaggg atagttctag ggtttgtttt	60
taatctcttg aggataaa atg gaa cga aga tta atg atc cct tgc ttc ttt Met Glu Arg Arg Leu Met Ile Pro Cys Phe Phe 1 5 10	111
tgg ttg att ctc gtt ttg gat ttg gtt ctc aga gtc tcg ggc aac gcc Trp Leu Ile Leu Val Leu Asp Leu Val Leu Arg Val Ser Gly Asn Ala 15 20 25	159
gaa ggt gat gct cta agt gca ctg aaa aac agt tta gcc gac cct aat Glu Gly Asp Ala Leu Ser Ala Leu Lys Asn Ser Leu Ala Asp Pro Asn 30 35 40	207
aag gtg ctt caa agt tgg gat gct act ctt gtt act cca tgt aca tgg Lys Val Leu Gln Ser Trp Asp Ala Thr Leu Val Thr Pro Cys Thr Trp 45 50 55	255
ttt cat gtt act tgc aat agc gac aat agt gtt aca cgt gtt gac ctt Phe His Val Thr Cys Asn Ser Asp Asn Ser Val Thr Arg Val Asp Leu 60 65 70 75	303
ggg aat gca aat cta tct gga cag ctc gta atg caa ctt ggt cag ctt Gly Asn Ala Asn Leu Ser Gly Gln Leu Val Met Gln Leu Gly Gln Leu 80 85 90	351
cca aac ttg cag tac ttg gag ctt tat agc aat aac att act ggg aca Pro Asn Leu Gln Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Thr 95 100 105	399
atc cca gaa cag ctt gga aat ctg acg gaa ttg gtg agc ttg gat ctt Ile Pro Glu Gln Leu Gly Asn Leu Thr Glu Leu Val Ser Leu Asp Leu 110 115 120	447
tac ttg aac aat tta agc ggg cct att cca tca act ctc ggc cga ctt Tyr Leu Asn Asn Leu Ser Gly Pro Ile Pro Ser Thr Leu Gly Arg Leu 125 130 135	495
aag aaa ctc cgt ttc ttg cgt ctt aat aac aat agc tta tct gga gaa Lys Lys Leu Arg Phe Leu Arg Leu Asn Asn Asn Ser Leu Ser Gly Glu 140 145 150 155	543
att cca agg tct ttg act gct gtc ctg acg cta caa gtt ctg gat ctc Ile Pro Arg Ser Leu Thr Ala Val Leu Thr Leu Gln Val Leu Asp Leu 160 165 170	591
tca aac aat cct ctc acc gga gat att cct gtt aat ggt tcc ttt tca Ser Asn Asn Pro Leu Thr Gly Asp Ile Pro Val Asn Gly Ser Phe Ser 175 180 185	639
ctt ttc act cca atc agt ttt gcc aac acc aag ttg act ccc ctt cct Leu Phe Thr Pro Ile Ser Phe Ala Asn Thr Lys Leu Thr Pro Leu Pro 190 195 200	687
gca tct cca ccg cct cct atc tct cct aca ccg cca tca cct gca ggg Ala Ser Pro Pro Pro Ile Ser Pro Thr Pro Pro Ser Pro Ala Gly 205 210 215	735
agt aat aga att act gga gcg att gcg gga gga gtt gct gca ggt gct Ser Asn Arg Ile Thr Gly Ala Ile Ala Gly Gly Val Ala Ala Gly Ala 220 225 230 235	783
gca ctt cta ttt gct gtt ccg gcc att gca cta gct tgg tgg cga agg	831

P59845PC00 sequence listing

Ala	Leu	Leu	Phe	Ala	Val	Pro	Ala	Ile	Ala	Leu	Ala	Trp	Trp	Arg	Arg		
				240					245					250			
aaa	aag	ccg	cag	gac	cac	ttc	ttt	gat	gta	cca	gct	gaa	gag	gac	cca	879	
Lys	Lys	Pro	Gln	Asp	His	Phe	Phe	Asp	Val	Pro	Ala	Glu	Glu	Asp	Pro		
			255					260					265				
gaa	gtt	cat	tta	gga	caa	ctg	aag	agg	ttt	tca	ttg	cgt	gaa	cta	caa	927	
Glu	Val	His	Leu	Gly	Gln	Leu	Lys	Arg	Phe	Ser	Leu	Arg	Glu	Leu	Gln		
			270				275					280					
gtt	gct	tcg	gat	aat	ttt	agc	aac	aag	aac	ata	ttg	ggt	aga	ggt	ggt	975	
Val	Ala	Ser	Asp	Asn	Phe	Ser	Asn	Lys	Asn	Ile	Leu	Gly	Arg	Gly	Gly		
	285					290					295						
ttt	ggt	aaa	gtt	tat	aaa	gga	cgg	tta	gct	gat	ggt	act	tta	gtg	gcc	1023	
Phe	Gly	Lys	Val	Tyr	Lys	Gly	Arg	Leu	Ala	Asp	Gly	Thr	Leu	Val	Ala		
	300				305					310					315		
gtt	aaa	agg	cta	aaa	gag	gag	cgc	acc	caa	ggt	ggc	gaa	ctg	cag	ttc	1071	
Val	Lys	Arg	Leu	Lys	Glu	Glu	Arg	Thr	Gln	Gly	Gly	Glu	Leu	Gln	Phe		
				320					325					330			
cag	aca	gag	gtt	gag	atg	att	agt	atg	gcg	gtt	cac	aga	aac	ttg	ctt	1119	
Gln	Thr	Glu	Val	Glu	Met	Ile	Ser	Met	Ala	Val	His	Arg	Asn	Leu	Leu		
			335					340					345				
cgg	ctt	cgt	gga	ttt	tgc	atg	act	cca	acc	gaa	aga	ttg	ctt	gtt	tat	1167	
Arg	Leu	Arg	Gly	Phe	Cys	Met	Thr	Pro	Thr	Glu	Arg	Leu	Leu	Val	Tyr		
			350				355					360					
ccc	tac	atg	gct	aat	gga	agt	gtt	gcc	tcc	tgt	tta	aga	gaa	cgt	ccc	1215	
Pro	Tyr	Met	Ala	Asn	Gly	Ser	Val	Ala	Ser	Cys	Leu	Arg	Glu	Arg	Pro		
	365					370					375						
gag	tcc	cag	cca	cca	ctt	gat	tgg	cca	aag	aga	cag	cgt	att	gcg	ttg	1263	
Glu	Ser	Gln	Pro	Pro	Leu	Asp	Trp	Pro	Lys	Arg	Gln	Arg	Ile	Ala	Leu		
	380				385					390					395		
gga	tct	gca	aga	ggg	ctt	gcg	tat	tta	cat	gat	cat	tgc	gac	cca	aag	1311	
Gly	Ser	Ala	Arg	Gly	Leu	Ala	Tyr	Leu	His	Asp	His	Cys	Asp	Pro	Lys		
				400					405					410			
att	att	cat	cga	gat	gtg	aaa	gct	gca	aat	att	ttg	ttg	gat	gaa	gag	1359	
Ile	Ile	His	Arg	Asp	Val	Lys	Ala	Ala	Asn	Ile	Leu	Leu	Asp	Glu	Glu		
			415					420					425				
ttt	gaa	gcc	gtg	gtt	ggg	gat	ttt	gga	ctt	gca	aaa	ctc	atg	gac	tac	1407	
Phe	Glu	Ala	Val	Val	Gly	Asp	Phe	Gly	Leu	Ala	Lys	Leu	Met	Asp	Tyr		
		430					435					440					
aaa	gac	aca	cat	gtg	aca	acc	gca	gtg	cgt	ggg	aca	att	ggt	cat	ata	1455	
Lys	Asp	Thr	His	Val	Thr	Thr	Ala	Val	Arg	Gly	Thr	Ile	Gly	His	Ile		
	445					450					455						
gcc	cct	gag	tac	ctt	tcc	act	gga	aaa	tca	tca	gag	aaa	acc	gat	gtc	1503	
Ala	Pro	Glu	Tyr	Leu	Ser	Thr	Gly	Lys	Ser	Ser	Glu	Lys	Thr	Asp	Val		
	460				465					470					475		
ttt	ggg	tat	gga	gtc	atg	ctt	ctt	gag	ctt	atc	act	gga	caa	agg	gct	1551	
Phe	Gly	Tyr	Gly	Val	Met	Leu	Leu	Glu	Leu	Ile	Thr	Gly	Gln	Arg	Ala		
				480					485					490			

P59845PC00 sequence listing

ttt gat ctt gct cgc ctc gcg aat gat gat gat gtc atg tta cta gac Phe Asp Leu Ala Arg Leu Ala Asn Asp Asp Asp Val Met Leu Leu Asp 495 500 505	1599
tgg gtg aaa ggg ttg tta aaa gag aag aaa ttg gaa gca cta gta gat Trp Val Lys Gly Leu Leu Lys Glu Lys Lys Leu Glu Ala Leu Val Asp 510 515 520	1647
gtt gat ctt cag ggt aat tac aaa gac gaa gaa gtg gag cag cta atc Val Asp Leu Gln Gly Asn Tyr Lys Asp Glu Glu Val Glu Gln Leu Ile 525 530 535	1695
caa gtg gct tta ctc tgc act cag agt tca cca atg gaa aga ccc aaa Gln Val Ala Leu Leu Cys Thr Gln Ser Ser Pro Met Glu Arg Pro Lys 540 545 550 555	1743
atg tct gaa gtt gta aga atg ctt gaa gga gat ggt tta gct gag aga Met Ser Glu Val Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Arg 560 565 570	1791
tgg gaa gag tgg caa aag gag gaa atg ttc aga caa gat ttc aac tac Trp Glu Glu Trp Gln Lys Glu Glu Met Phe Arg Gln Asp Phe Asn Tyr 575 580 585	1839
cca acc cac cat cca gcc gtg tct ggc tgg atc att ggc gat tcc act Pro Thr His His Pro Ala Val Ser Gly Trp Ile Ile Gly Asp Ser Thr 590 595 600	1887
tcc cag atc gaa aac gaa tac ccc tcg ggt cca aga taa gattcgaaac Ser Gln Ile Glu Asn Glu Tyr Pro Ser Gly Pro Arg 605 610 615	1936
acgaatgttt tttctgtatt ttgtttttct ctgtatttat tgagggtttt agcttc	1992

<210> 57
 <211> 615
 <212> PRT
 <213> Arabidopsis thaliana

<400> 57

Met Glu Arg Arg Leu Met Ile Pro Cys Phe Phe Trp Leu Ile Leu Val 1 5 10 15
Leu Asp Leu Val Leu Arg Val Ser Gly Asn Ala Glu Gly Asp Ala Leu 20 25 30
Ser Ala Leu Lys Asn Ser Leu Ala Asp Pro Asn Lys Val Leu Gln Ser 35 40 45
Trp Asp Ala Thr Leu Val Thr Pro Cys Thr Trp Phe His Val Thr Cys 50 55 60
Asn Ser Asp Asn Ser Val Thr Arg Val Asp Leu Gly Asn Ala Asn Leu 65 70 75 80
Ser Gly Gln Leu Val Met Gln Leu Gly Gln Leu Pro Asn Leu Gln Tyr

P59845PC00 sequence listing

85

90

95

Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Thr Ile Pro Glu Gln Leu
100 105 110

Gly Asn Leu Thr Glu Leu Val Ser Leu Asp Leu Tyr Leu Asn Asn Leu
115 120 125

Ser Gly Pro Ile Pro Ser Thr Leu Gly Arg Leu Lys Lys Leu Arg Phe
130 135 140

Leu Arg Leu Asn Asn Asn Ser Leu Ser Gly Glu Ile Pro Arg Ser Leu
145 150 155 160

Thr Ala Val Leu Thr Leu Gln Val Leu Asp Leu Ser Asn Asn Pro Leu
165 170 175

Thr Gly Asp Ile Pro Val Asn Gly Ser Phe Ser Leu Phe Thr Pro Ile
180 185 190

Ser Phe Ala Asn Thr Lys Leu Thr Pro Leu Pro Ala Ser Pro Pro Pro
195 200 205

Pro Ile Ser Pro Thr Pro Pro Ser Pro Ala Gly Ser Asn Arg Ile Thr
210 215 220

Gly Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Leu Phe Ala
225 230 235 240

Val Pro Ala Ile Ala Leu Ala Trp Trp Arg Arg Lys Lys Pro Gln Asp
245 250 255

His Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly
260 265 270

Gln Leu Lys Arg Phe Ser Leu Arg Glu Leu Gln Val Ala Ser Asp Asn
275 280 285

Phe Ser Asn Lys Asn Ile Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr
290 295 300

Lys Gly Arg Leu Ala Asp Gly Thr Leu Val Ala Val Lys Arg Leu Lys
305 310 315 320

Glu Glu Arg Thr Gln Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu
325 330 335

P59845PC00 sequence listing

Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe
340 345 350

Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn
355 360 365

Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Glu Ser Gln Pro Pro
370 375 380

Leu Asp Trp Pro Lys Arg Gln Arg Ile Ala Leu Gly Ser Ala Arg Gly
385 390 395 400

Leu Ala Tyr Leu His Asp His Cys Asp Pro Lys Ile Ile His Arg Asp
405 410 415

Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val
420 425 430

Gly Asp Phe Gly Leu Ala Lys Leu Met Asp Tyr Lys Asp Thr His Val
435 440 445

Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu
450 455 460

Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Val
465 470 475 480

Met Leu Leu Glu Leu Ile Thr Gly Gln Arg Ala Phe Asp Leu Ala Arg
485 490 495

Leu Ala Asn Asp Asp Asp Val Met Leu Leu Asp Trp Val Lys Gly Leu
500 505 510

Leu Lys Glu Lys Lys Leu Glu Ala Leu Val Asp Val Asp Leu Gln Gly
515 520 525

Asn Tyr Lys Asp Glu Glu Val Glu Gln Leu Ile Gln Val Ala Leu Leu
530 535 540

Cys Thr Gln Ser Ser Pro Met Glu Arg Pro Lys Met Ser Glu Val Val
545 550 555 560

Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Glu Glu Trp Gln
565 570 575

Lys Glu Glu Met Phe Arg Gln Asp Phe Asn Tyr Pro Thr His His Pro
580 585 590

P59845PC00 sequence listing

Ala Val Ser Gly Trp Ile Ile Gly Asp Ser Thr Ser Gln Ile Glu Asn
595 600 605

Glu Tyr Pro Ser Gly Pro Arg
610 615

<210> 58
<211> 2034
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (30)..(1979)

<400> 58
ttgttaacct ctcgtaacta aaatcttcc atg gta gta gta aca aag aag acc 53
Met Val Val Val Thr Lys Lys Thr
1 5

atg aag att caa att cat ctc ctt tac tcg ttc ttg ttc ctc tgt ttc 101
Met Lys Ile Gln Ile His Leu Leu Tyr Ser Phe Leu Phe Leu Cys Phe
10 15 20

tct act ctc act cta tct tct gag ccc aga aac cct gaa gtt gag gcg 149
Ser Thr Leu Thr Leu Ser Ser Glu Pro Arg Asn Pro Glu Val Glu Ala
25 30 35 40

ttg ata agt ata agg aac aat ttg cat gat cct cat gga gct ttg aac 197
Leu Ile Ser Ile Arg Asn Asn Leu His Asp Pro His Gly Ala Leu Asn
45 50 55

aat tgg gac gag ttt tca gtt gat cct tgt agc tgg gct atg atc act 245
Asn Trp Asp Glu Phe Ser Val Asp Pro Cys Ser Trp Ala Met Ile Thr
60 65 70

tgc tct ccc gac aac ctc gtc att gga cta gga gcg ccg agc cag tct 293
Cys Ser Pro Asp Asn Leu Val Ile Gly Leu Gly Ala Pro Ser Gln Ser
75 80 85

ctc tcg gga ggt tta tct gag tct atc gga aat ctc aca aat ctc cga 341
Leu Ser Gly Gly Leu Ser Glu Ser Ile Gly Asn Leu Thr Asn Leu Arg
90 95 100

caa gtg tca ttg caa aat aac aac atc tcc ggc aaa att cca ccg gag 389
Gln Val Ser Leu Gln Asn Asn Asn Ile Ser Gly Lys Ile Pro Pro Glu
105 110 115 120

ctc ggt ttt cta ccc aaa tta caa acc ttg gat ctt tcc aac aac cga 437
Leu Gly Phe Leu Pro Lys Leu Gln Thr Leu Asp Leu Ser Asn Asn Arg
125 130 135

ttc tcc ggt gac atc cct gtt tcc atc gac cag cta agc agc ctt caa 485
Phe Ser Gly Asp Ile Pro Val Ser Ile Asp Gln Leu Ser Ser Leu Gln
140 145 150

tat ctg aga ctc aac aac aac tct ttg tct ggg ccc ttc cct gct tct 533
Tyr Leu Arg Leu Asn Asn Asn Ser Leu Ser Gly Pro Phe Pro Ala Ser
155 160 165

P59845PC00 sequence listing

ttg tcc caa att cct cac ctc tcc ttc ttg gac ttg tct tac aac aat Leu Ser Gln Ile Pro His Leu Ser Phe Leu Asp Leu Ser Tyr Asn Asn 170 175 180	581
ctc agt ggc cct gtt cct aaa ttc cca gca agg act tta aac gtt gct Leu Ser Gly Pro Val Pro Lys Phe Pro Ala Arg Thr Leu Asn Val Ala 185 190 195 200	629
ggt aat cct ttg att tgt aga agc aac cca cct gag att tgt tct gga Gly Asn Pro Leu Ile Cys Arg Ser Asn Pro Pro Glu Ile Cys Ser Gly 205 210 215	677
tca atc aat gca agt cca ctt tct gtt tct ttg agc tct tca tca gga Ser Ile Asn Ala Ser Pro Leu Ser Val Ser Leu Ser Ser Ser Ser Gly 220 225 230	725
cgc agg tct aat aga ttg gca ata gct ctt agt gta agc ctt ggc tct Arg Arg Ser Asn Arg Leu Ala Ile Ala Leu Ser Val Ser Leu Gly Ser 235 240 245	773
gtt gtt ata cta gtc ctt gct ctc ggg tcc ttt tgt tgg tac cga aag Val Val Ile Leu Val Leu Ala Leu Gly Ser Phe Cys Trp Tyr Arg Lys 250 255 260	821
aaa caa aga agg cta ctg atc ctt aac tta aac gca gat aaa caa gag Lys Gln Arg Arg Leu Leu Ile Leu Asn Leu Asn Ala Asp Lys Gln Glu 265 270 275 280	869
gaa ggg ctt caa gga ctt ggg aat cta aga agc ttc aca ttc aga gaa Glu Gly Leu Gln Gly Leu Gly Asn Leu Arg Arg Ser Phe Thr Phe Arg Glu 285 290 295	917
ctc cat gtt tat aca gat ggt ttc agt tcc aag aac att ctc ggc gct Leu His Val Tyr Thr Asp Gly Phe Ser Ser Lys Asn Ile Leu Gly Ala 300 305 310	965
ggt gga ttc ggt aat gtg tac aga ggc aag ctt gga gat ggg aca atg Gly Gly Phe Gly Asn Val Tyr Arg Gly Lys Leu Gly Asp Gly Thr Met 315 320 325	1013
gtg gca gtg aaa cgg ttg aag gat att aat gga acc tca ggg gat tca Val Ala Val Lys Arg Leu Lys Asp Ile Asn Gly Thr Ser Ser Gly Asp Ser 330 335 340	1061
cag ttt cgt atg gag cta gag atg att agc tta gct gtt cat aag aat Gln Phe Arg Met Glu Leu Glu Met Ile Ser Leu Ala Val His Lys Asn 345 350 355 360	1109
ctg ctt cgg tta att ggt tat tgc gca act tct ggt gaa agg ctt ctt Leu Leu Arg Leu Ile Gly Tyr Cys Ala Thr Ser Gly Glu Arg Leu Leu 365 370 375	1157
gtt tac cct tac atg cct aat gga agc gtc gcc tct aag ctt aaa tct Val Tyr Pro Tyr Met Pro Asn Gly Ser Val Ala Ser Lys Leu Lys Ser 380 385 390	1205
aaa ccg gca ttg gac tgg aac atg agg aag agg ata gca att ggt gca Lys Pro Ala Leu Asp Trp Asn Met Arg Lys Arg Ile Ala Ile Gly Ala 395 400 405	1253
gcg aga ggt ttg ttg tat cta cat gag caa tgt gat ccc aag atc att Ala Arg Gly Leu Leu Tyr Leu His Glu Gln Cys Asp Pro Lys Ile Ile Page 97	1301

P59845PC00 sequence listing

410	415	420	
cat aga gat gta aag gca gct aat att ctc tta gac gag tgc ttt gaa His Arg Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Cys Phe Glu 425 430 435 440			1349
gct gtt gtt ggt gac ttt gga ctc gca aag ctc ctt aac cat gcg gat Ala Val Val Gly Asp Phe Gly Leu Ala Lys Leu Leu Asn His Ala Asp 445 450 455			1397
tct cat gtc aca act gcg gtc cgt ggt acg gtt ggc cac att gca cct Ser His Val Thr Thr Ala Val Arg Gly Thr Val Gly His Ile Ala Pro 460 465 470			1445
gaa tat ctc tcc act ggt cag tct tct gag aaa acc gat gtg ttt ggg Glu Tyr Leu Ser Thr Gly Gln Ser Ser Glu Lys Thr Asp Val Phe Gly 475 480 485			1493
ttc ggt ata cta ttg ctc gag ctc ata acc gga ctg aga gct ctt gag Phe Gly Ile Leu Leu Leu Glu Leu Ile Thr Gly Arg Ala Leu Glu 490 495 500			1541
ttt ggt aaa acc gtt agc cag aaa gga gct atg ctt gaa tgg gtg agg Phe Gly Lys Thr Val Ser Gln Lys Gly Ala Met Leu Glu Trp Val Arg 505 510 515 520			1589
aaa tta cat gaa gag atg aaa gta gag gaa cta ttg gat cga gaa ctc Lys Leu His Glu Glu Met Lys Val Glu Glu Leu Leu Asp Arg Glu Leu 525 530 535			1637
gga act aac tac gat aag att gaa gtt gga gag atg ttg caa gtg gct Gly Thr Asn Tyr Asp Lys Ile Glu Val Gly Glu Met Leu Gln Val Ala 540 545 550			1685
ttg cta tgc aca caa tat ctg cca gct cat cgt cct aaa atg tct gaa Leu Leu Cys Thr Gln Tyr Leu Pro Ala His Arg Pro Lys Met Ser Glu 555 560 565			1733
gtt gtt ttg atg ctt gaa ggc gat gga tta gcc gag aga tgg gct gct Val Val Leu Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Ala Ala 570 575 580			1781
tcg cat aac cat tca cat ttc tac cat gcc aat atc tct ttc aag aca Ser His Asn His Ser His Phe Tyr His Ala Asn Ile Ser Phe Lys Thr 585 590 595 600			1829
atc tct tct ctg tct act act tct gtc tca agg ctt gac gca cat tgc Ile Ser Ser Leu Ser Thr Thr Ser Val Ser Arg Leu Asp Ala His Cys 605 610 615			1877
aat gat cca act tat caa atg ttt gga tct tcg gct ttc gat gat gac Asn Asp Pro Thr Tyr Gln Met Phe Gly Ser Ser Ala Phe Asp Asp Asp 620 625 630			1925
gat gat cat cag cct tta gat tcc ttt gcc atg gaa cta tcc ggt cca Asp Asp His Gln Pro Leu Asp Ser Phe Ala Met Glu Leu Ser Gly Pro 635 640 645			1973
aga taa cacaatgaaa gaaagatatc attttttacga tggatcaaac aatccaatga Arg			2029
aaaaa			2034

P59845PC00 sequence listing

<210> 59
 <211> 649
 <212> PRT
 <213> Arabidopsis thaliana

<400> 59

Met Val Val Val Thr Lys Lys Thr Met Lys Ile Gln Ile His Leu Leu
 1 5 10 15

Tyr Ser Phe Leu Phe Leu Cys Phe Ser Thr Leu Thr Leu Ser Ser Glu
 20 25 30

Pro Arg Asn Pro Glu Val Glu Ala Leu Ile Ser Ile Arg Asn Asn Leu
 35 40 45

His Asp Pro His Gly Ala Leu Asn Asn Trp Asp Glu Phe Ser Val Asp
 50 55 60

Pro Cys Ser Trp Ala Met Ile Thr Cys Ser Pro Asp Asn Leu Val Ile
 65 70 75 80

Gly Leu Gly Ala Pro Ser Gln Ser Leu Ser Gly Gly Leu Ser Glu Ser
 85 90 95

Ile Gly Asn Leu Thr Asn Leu Arg Gln Val Ser Leu Gln Asn Asn Asn
 100 105 110

Ile Ser Gly Lys Ile Pro Pro Glu Leu Gly Phe Leu Pro Lys Leu Gln
 115 120 125

Thr Leu Asp Leu Ser Asn Asn Arg Phe Ser Gly Asp Ile Pro Val Ser
 130 135 140

Ile Asp Gln Leu Ser Ser Leu Gln Tyr Leu Arg Leu Asn Asn Asn Ser
 145 150 155 160

Leu Ser Gly Pro Phe Pro Ala Ser Leu Ser Gln Ile Pro His Leu Ser
 165 170 175

Phe Leu Asp Leu Ser Tyr Asn Asn Leu Ser Gly Pro Val Pro Lys Phe
 180 185 190

Pro Ala Arg Thr Leu Asn Val Ala Gly Asn Pro Leu Ile Cys Arg Ser
 195 200 205

Asn Pro Pro Glu Ile Cys Ser Gly Ser Ile Asn Ala Ser Pro Leu Ser
 210 215 220

P59845PC00 sequence listing

Val Ser Leu Ser Ser Ser Ser Gly Arg Arg Ser Asn Arg Leu Ala Ile
225 230 235 240

Ala Leu Ser Val Ser Leu Gly Ser Val Val Ile Leu Val Leu Ala Leu
245 250 255

Gly Ser Phe Cys Trp Tyr Arg Lys Lys Gln Arg Arg Leu Leu Ile Leu
260 265 270

Asn Leu Asn Ala Asp Lys Gln Glu Glu Gly Leu Gln Gly Leu Gly Asn
275 280 285

Leu Arg Ser Phe Thr Phe Arg Glu Leu His Val Tyr Thr Asp Gly Phe
290 295 300

Ser Ser Lys Asn Ile Leu Gly Ala Gly Gly Phe Gly Asn Val Tyr Arg
305 310 315 320

Gly Lys Leu Gly Asp Gly Thr Met Val Ala Val Lys Arg Leu Lys Asp
325 330 335

Ile Asn Gly Thr Ser Gly Asp Ser Gln Phe Arg Met Glu Leu Glu Met
340 345 350

Ile Ser Leu Ala Val His Lys Asn Leu Leu Arg Leu Ile Gly Tyr Cys
355 360 365

Ala Thr Ser Gly Glu Arg Leu Leu Val Tyr Pro Tyr Met Pro Asn Gly
370 375 380

Ser Val Ala Ser Lys Leu Lys Ser Lys Pro Ala Leu Asp Trp Asn Met
385 390 395 400

Arg Lys Arg Ile Ala Ile Gly Ala Ala Arg Gly Leu Leu Tyr Leu His
405 410 415

Glu Gln Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn
420 425 430

Ile Leu Leu Asp Glu Cys Phe Glu Ala Val Val Gly Asp Phe Gly Leu
435 440 445

Ala Lys Leu Leu Asn His Ala Asp Ser His Val Thr Thr Ala Val Arg
450 455 460

Gly Thr Val Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Gln Ser
Page 100

P59845PC00 sequence listing

465 470 475 480

Ser Glu Lys Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu Glu Leu
 485 490 495

Ile Thr Gly Leu Arg Ala Leu Glu Phe Gly Lys Thr Val Ser Gln Lys
 500 505 510

Gly Ala Met Leu Glu Trp Val Arg Lys Leu His Glu Glu Met Lys Val
 515 520 525

Glu Glu Leu Leu Asp Arg Glu Leu Gly Thr Asn Tyr Asp Lys Ile Glu
 530 535 540

Val Gly Glu Met Leu Gln Val Ala Leu Leu Cys Thr Gln Tyr Leu Pro
545 550 555 560

Ala His Arg Pro Lys Met Ser Glu Val Val Leu Met Leu Glu Gly Asp
 565 570 575

Gly Leu Ala Glu Arg Trp Ala Ala Ser His Asn His Ser His Phe Tyr
 580 585 590

His Ala Asn Ile Ser Phe Lys Thr Ile Ser Ser Leu Ser Thr Thr Ser
 595 600 605

Val Ser Arg Leu Asp Ala His Cys Asn Asp Pro Thr Tyr Gln Met Phe
610 615 620

Gly Ser Ser Ala Phe Asp Asp Asp Asp Asp His Gln Pro Leu Asp Ser
625 630 635 640

Phe Ala Met Glu Leu Ser Gly Pro Arg
 645

<210> 60
<211> 1976
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (61)..(1866)

<400> 60
tttaaaaacc ttgctagttc tcaattctca tgactttgct tttagtctta gaagtggaaa 60

atg gaa cat gga tca tcc cgt ggc ttt att tgg ctg att cta ttt ctc 108
Met Glu His Gly Ser Ser Arg Gly Phe Ile Trp Leu Ile Leu Phe Leu
1 5 10 15

P59845PC00 sequence listing

gat ttt gtt tcc aga gtc acc gga aaa aca caa gtt gat gct ctc att Asp Phe Val Ser Arg Val Thr Gly Lys Thr Gln Val Asp Ala Leu Ile 20 25 30	156
gct cta aga agc agt tta tca tca ggt gac cat aca aac aat ata ctc Ala Leu Arg Ser Ser Leu Ser Ser Gly Asp His Thr Asn Asn Ile Leu 35 40 45	204
caa agc tgg aat gcc act cac gtt act cca tgt tca tgg ttt cat gtt Gln Ser Trp Asn Ala Thr His Val Thr Pro Cys Ser Trp Phe His Val 50 55 60	252
act tgc aat act gaa aac agt gtt act cgt ctt gac ctg ggg agt gct Thr Cys Asn Thr Glu Asn Ser Val Thr Arg Leu Asp Leu Gly Ser Ala 65 70 75 80	300
aat cta tct gga gaa ctg gtg cca cag ctt gct cag ctt cca aat ttg Asn Leu Ser Gly Glu Leu Val Pro Gln Leu Ala Gln Leu Pro Asn Leu 85 90 95	348
cag tac ttg gaa ctt ttt aac aat aat att act ggg gag ata cct gag Gln Tyr Leu Glu Leu Phe Asn Asn Asn Ile Thr Gly Glu Ile Pro Glu 100 105 110	396
gag ctt ggc gac ttg atg gaa cta gta agc ttg gac ctt ttt gca aac Glu Leu Gly Asp Leu Met Glu Leu Val Ser Leu Asp Leu Phe Ala Asn 115 120 125	444
aac ata agc ggt ccc atc cct tcc tct ctt ggc aaa cta gga aaa ctc Asn Ile Ser Gly Pro Ile Pro Ser Ser Leu Gly Lys Leu 130 135 140	492
cgc ttc ttg cgt ctt tat aac aac agc tta tct gga gaa att cca agg Arg Phe Leu Arg Leu Tyr Asn Asn Ser Leu Ser Gly Glu Ile Pro Arg 145 150 155 160	540
tct ttg act gct ctg ccg ctg gat gtt ctt gat atc tca aac aat cgg Ser Leu Thr Ala Leu Pro Leu Asp Val Leu Asp Ile Ser Asn Asn Arg 165 170 175	588
ctc agt gga gat att cct gtt aat ggt tcc ttt tcg cag ttc act tct Leu Ser Gly Asp Ile Pro Val Asn Gly Ser Phe Ser Gln Phe Thr Ser 180 185 190	636
atg agt ttt gcc aat aat aaa tta agg ccg cga cct gca tct cct tca Met Ser Phe Ala Asn Asn Lys Leu Arg Pro Arg Pro Ala Ser Pro Ser 195 200 205	684
cca tca cct tca gga acg tct gca gca ata gta gtg gga gtt gct gcg Pro Ser Pro Ser Gly Thr Ser Ala Ala Ile Val Val Gly Val Ala Ala 210 215 220	732
ggt gca gca ctt cta ttt gcg ctt gct tgg tgg ctg aga aga aaa ctg Gly Ala Ala Leu Leu Phe Ala Leu Ala Trp Trp Leu Arg Arg Lys Leu 225 230 235 240	780
cag ggt cac ttt ctt gat gta cct gct gaa gaa gac cca gag gtt tat Gln Gly His Phe Leu Asp Val Pro Ala Glu Glu Asp Pro Glu Val Tyr 245 250 255	828
tta gga caa ttt aaa agg ttc tcc ttg cgt gaa ctg cta gtt gct aca Leu Gly Gln Phe Lys Arg Phe Ser Leu Arg Glu Leu Leu Val Ala Thr 260 265 270	876

P59845PC00 sequence listing

260	265	270	
gag aaa ttt agc aaa aga aat gta ttg ggc aaa gga cgt ttt ggt ata Glu Lys Phe Ser Lys Arg Asn Val Leu Gly Lys Gly Arg Phe Gly Ile 275 280 285			924
ttg tat aaa gga cgt tta gct gat gac act cta gtg gct gtg aaa cgg Leu Tyr Lys Gly Arg Leu Ala Asp Asp Thr Leu Val Ala Val Lys Arg 290 295 300			972
cta aat gaa gaa cgt acc aag ggt ggg gaa ctg cag ttt caa acc gaa Leu Asn Glu Glu Arg Thr Lys Gly Gly Glu Leu Gln Phe Gln Thr Glu 305 310 315 320			1020
gtt gag atg atc agt atg gcc gtt cat agg aac ttg ctt cgg ctt cgt Val Glu Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg 325 330 335			1068
ggc ttt tgc atg act cca act gaa aga tta ctt gtt tat ccc tac atg Gly Phe Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met 340 345 350			1116
gct aat gga agt gtt gct tct tgt tta aga gag cgt cct gaa ggc aat Ala Asn Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Glu Gly Asn 355 360 365			1164
cca gcc ctt gac tgg cca aaa aga aag cat att gct ctg gga tca gca Pro Ala Leu Asp Trp Pro Lys Arg Lys His Ile Ala Leu Gly Ser Ala 370 375 380			1212
agg ggg ctc gca tat tta cac gat cat tgc gac caa aag atc att cac Arg Gly Leu Ala Tyr Leu His Asp His Cys Asp Gln Lys Ile Ile His 385 390 395 400			1260
ctg gat gtg aaa gct gca aat ata ctg tta gat gaa gag ttt gaa gct Leu Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala 405 410 415			1308
gtt gtt gga gat ttt ggg cta gca aaa tta atg aat tat aac gac tcc Val Val Gly Asp Phe Gly Leu Ala Lys Leu Met Asn Tyr Asn Asp Ser 420 425 430			1356
cat gtg aca act gct gta cgg ggt acg att ggc cat ata gcg ccc gag His Val Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu 435 440 445			1404
tac ctc tcg aca gga aaa tct tct gag aag act gat gtt ttt ggg tac Tyr Leu Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr 450 455 460			1452
ggg gtc atg ctt ctc gag ctc atc act gga caa aag gct ttc gat ctt Gly Val Met Leu Leu Glu Leu Ile Thr Gly Gln Lys Ala Phe Asp Leu 465 470 475 480			1500
gct cgg ctt gca aat gat gat gat atc atg tta ctc gac tgg gtg aaa Ala Arg Leu Ala Asn Asp Asp Asp Ile Met Leu Leu Asp Trp Val Lys 485 490 495			1548
gag gtt ttg aaa gag aag aag ttg gaa agc ctt gtg gat gca gaa ctc Glu Val Leu Lys Glu Lys Lys Leu Glu Ser Leu Val Asp Ala Glu Leu 500 505 510			1596
gaa gga aag tac gtg gaa aca gaa gtg gag cag ctg ata caa atg gct Page 103			1644

P59845PC00 sequence listing

Glu Gly Lys Tyr Val Glu Thr	Glu Val Glu Gln Leu Ile Gln Met Ala	
515	520	525
ctg ctc tgc act caa agt tct gca atg gaa cgt cca aag atg tca gaa	1692	
Leu Leu Cys Thr Gln Ser Ser	Ala Met Glu Arg Pro Lys Met Ser Glu	
530	535	540
gta gtg aga atg ctg gaa gga gat ggt tta gct gag aga tgg gaa gaa	1740	
Val Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Glu Glu		
545	550	555
tggtgcaaagagagagatgccaatacatgattttaacatatcaagcctat	1788	
Trp Gln Lys Glu Glu Met Pro Ile His Asp Phe Asn Tyr Gln Ala Tyr		
565	570	575
cct cat gct ggc act gac tgg ctc atc ccc tat tcc aat tcc ctt atc	1836	
Pro His Ala Gly Thr Asp Trp Leu Ile Pro Tyr Ser Asn Ser Leu Ile		
580	585	590
gaa aac gat tac ccc tcg ggg cca aga taa ccttttagaa agggtcattt	1886	
Glu Asn Asp Tyr Pro Ser Gly Pro Arg		
595	600	
cttgtgggtt cttcaacaag tatatatata ggtagtgaag ttgtaagaag caaaacccca	1946	
cattcacctt tgaatatcac tactctataa	1976	

<210> 61
 <211> 601
 <212> PRT
 <213> Arabidopsis thaliana

<400> 61

Met Glu His Gly Ser Ser Arg Gly Phe Ile Trp Leu Ile Leu Phe Leu
1 5 10 15
Asp Phe Val Ser Arg Val Thr Gly Lys Thr Gln Val Asp Ala Leu Ile
20 25 30
Ala Leu Arg Ser Ser Leu Ser Ser Gly Asp His Thr Asn Asn Ile Leu
35 40 45
Gln Ser Trp Asn Ala Thr His Val Thr Pro Cys Ser Trp Phe His Val
50 55 60
Thr Cys Asn Thr Glu Asn Ser Val Thr Arg Leu Asp Leu Gly Ser Ala
65 70 75 80
Asn Leu Ser Gly Glu Leu Val Pro Gln Leu Ala Gln Leu Pro Asn Leu
85 90 95
Gln Tyr Leu Glu Leu Phe Asn Asn Asn Ile Thr Gly Glu Ile Pro Glu
100 105 110

P59845PC00 sequence listing

Glu Leu Gly Asp Leu Met Glu Leu Val Ser Leu Asp Leu Phe Ala Asn
115 120 125

Asn Ile Ser Gly Pro Ile Pro Ser Ser Leu Gly Lys Leu Gly Lys Leu
130 135 140

Arg Phe Leu Arg Leu Tyr Asn Asn Ser Leu Ser Gly Glu Ile Pro Arg
145 150 155 160

Ser Leu Thr Ala Leu Pro Leu Asp Val Leu Asp Ile Ser Asn Asn Arg
165 170 175

Leu Ser Gly Asp Ile Pro Val Asn Gly Ser Phe Ser Gln Phe Thr Ser
180 185 190

Met Ser Phe Ala Asn Asn Lys Leu Arg Pro Arg Pro Ala Ser Pro Ser
195 200 205

Pro Ser Pro Ser Gly Thr Ser Ala Ala Ile Val Val Gly Val Ala Ala
210 215 220

Gly Ala Ala Leu Leu Phe Ala Leu Ala Trp Trp Leu Arg Arg Lys Leu
225 230 235 240

Gln Gly His Phe Leu Asp Val Pro Ala Glu Glu Asp Pro Glu Val Tyr
245 250 255

Leu Gly Gln Phe Lys Arg Phe Ser Leu Arg Glu Leu Leu Val Ala Thr
260 265 270

Glu Lys Phe Ser Lys Arg Asn Val Leu Gly Lys Gly Arg Phe Gly Ile
275 280 285

Leu Tyr Lys Gly Arg Leu Ala Asp Asp Thr Leu Val Ala Val Lys Arg
290 295 300

Leu Asn Glu Glu Arg Thr Lys Gly Gly Glu Leu Gln Phe Gln Thr Glu
305 310 315 320

Val Glu Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg
325 330 335

Gly Phe Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met
340 345 350

Ala Asn Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Glu Gly Asn
355 360 365

P59845PC00 sequence listing

Pro Ala Leu Asp Trp Pro Lys Arg Lys His Ile Ala Leu Gly Ser Ala
370 375 380

Arg Gly Leu Ala Tyr Leu His Asp His Cys Asp Gln Lys Ile Ile His
385 390 395 400

Leu Asp Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala
405 410 415

Val Val Gly Asp Phe Gly Leu Ala Lys Leu Met Asn Tyr Asn Asp Ser
420 425 430

His Val Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu
435 440 445

Tyr Leu Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr
450 455 460

Gly Val Met Leu Leu Glu Leu Ile Thr Gly Gln Lys Ala Phe Asp Leu
465 470 475 480

Ala Arg Leu Ala Asn Asp Asp Asp Ile Met Leu Leu Asp Trp Val Lys
485 490 495

Glu Val Leu Lys Glu Lys Lys Leu Glu Ser Leu Val Asp Ala Glu Leu
500 505 510

Glu Gly Lys Tyr Val Glu Thr Glu Val Glu Gln Leu Ile Gln Met Ala
515 520 525

Leu Leu Cys Thr Gln Ser Ser Ala Met Glu Arg Pro Lys Met Ser Glu
530 535 540

Val Val Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Glu Glu
545 550 555 560

Trp Gln Lys Glu Glu Met Pro Ile His Asp Phe Asn Tyr Gln Ala Tyr
565 570 575

Pro His Ala Gly Thr Asp Trp Leu Ile Pro Tyr Ser Asn Ser Leu Ile
580 585 590

Glu Asn Asp Tyr Pro Ser Gly Pro Arg
595 600

<210> 62
<211> 1982

P59845PC00 sequence listing

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (55)..(1902)

<400> 62

taataaacct ctaataataa tggcttttgct tttactctga tgacaagttc aaaa atg 57
Met
1

gaa caa aga tca ctc ctt tgc ttc ctt tat ctg ctc cta cta ttc aat 105
Glu Gln Arg Ser Leu Leu Cys Phe Leu Tyr Leu Leu Leu Leu Phe Asn
5 10 15

ttc act ctc aga gtc gct gga aac gct gaa ggt gat gct ttg act cag 153
Phe Thr Leu Arg Val Ala Gly Asn Ala Glu Gly Asp Ala Leu Thr Gln
20 25 30

ctg aaa aac agt ttg tca tca ggt gac cct gca aac aat gta ctc caa 201
Leu Lys Asn Ser Leu Ser Ser Gly Asp Pro Ala Asn Asn Val Leu Gln
35 40 45

agc tgg gat gct act ctt gtt act cca tgt act tgg ttt cat gtt act 249
Ser Trp Asp Ala Thr Leu Val Thr Pro Cys Thr Trp Phe His Val Thr
50 55 60 65

tgc aat cct gag aat aaa gtt act cgt gtt gac ctt ggg aat gca aaa 297
Cys Asn Pro Glu Asn Lys Val Thr Arg Val Asp Leu Gly Asn Ala Lys
70 75 80

cta tct gga aag ttg gtt cca gaa ctt ggt cag ctt tta aac ttg cag 345
Leu Ser Gly Lys Leu Val Pro Glu Leu Gly Gln Leu Leu Asn Leu Gln
85 90 95

tac ttg gag ctt tat agc aat aac att aca ggg gag ata cct gag gag 393
Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Glu Ile Pro Glu Glu
100 105 110

ctt ggc gac ttg gtg gaa cta gta agc ttg gat ctt tac gca aac agc 441
Leu Gly Asp Leu Val Glu Leu Val Ser Leu Asp Leu Tyr Ala Asn Ser
115 120 125

ata agc ggt ccc atc cct tcg tct ctt ggc aaa cta gga aaa ctc cgg 489
Ile Ser Gly Pro Ile Pro Ser Ser Leu Gly Lys Leu Gly Lys Leu Arg
130 135 140 145

ttc ttg cgt ctt aac aac aat agc tta tca ggg gaa att cca atg act 537
Phe Leu Arg Leu Asn Asn Asn Ser Leu Ser Gly Glu Ile Pro Met Thr
150 155 160

ttg act tct gtg cag ctg caa gtt ctg gat atc tca aac aat cgg ctc 585
Leu Thr Ser Val Gln Leu Gln Val Leu Asp Ile Ser Asn Asn Arg Leu
165 170 175

agt gga gat att cct gtt aat ggt tct ttt tcg ctc ttc act cct atc 633
Ser Gly Asp Ile Pro Val Asn Gly Ser Phe Ser Leu Phe Thr Pro Ile
180 185 190

agt ttt gcg aat aat agc tta acg gat ctt ccc gaa cct ccg cct act 681
Ser Phe Ala Asn Asn Ser Leu Thr Asp Leu Pro Glu Pro Pro Pro Thr

P59845PC00 sequence listing

195	200	205	
tct acc tct cct acg cca cca cca cct tca ggg ggg caa atg act gca Ser Thr Ser Pro Thr Pro Pro Pro Pro Ser Gly Gly Gln Met Thr Ala 210 215 220 225			729
gca ata gca ggg gga gtt gct gca ggt gca gca ctt cta ttt gct gtt Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Leu Leu Phe Ala Val 230 235 240			777
cca gcc att gcg ttt gct tgg tgg ctc aga aga aaa cca cag gac cac Pro Ala Ile Ala Phe Ala Trp Trp Leu Arg Arg Lys Pro Gln Asp His 245 250 255			825
ttt ttt gat gta cct gct gaa gaa gac cca gag gtt cat tta gga caa Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly Gln 260 265 270			873
ctc aaa agg ttt acc ttg cgt gaa ctg tta gtt gct act gat aac ttt Leu Lys Arg Phe Thr Leu Arg Glu Leu Leu Val Ala Thr Asp Asn Phe 275 280 285			921
agc aat aaa aat gta ttg ggt aga ggt ggt ttt ggt aaa gtg tat aaa Ser Asn Lys Asn Val Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr Lys 290 295 300 305			969
gga cgt tta gcc gat ggc aat cta gtg gct gtc aaa agg cta aaa gaa Gly Arg Leu Ala Asp Gly Asn Leu Val Ala Val Lys Arg Leu Lys Glu 310 315 320			1017
gaa cgt acc aag ggt ggg gaa ctg cag ttt caa acc gaa gtt gag atg Glu Arg Thr Lys Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu Met 325 330 335			1065
atc agt atg gcc gtt cat agg aac ttg ctt cgg ctt cgt ggc ttt tgc Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe Cys 340 345 350			1113
atg act cca act gaa aga tta ctt gtt tat ccc tac atg gct aat gga Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn Gly 355 360 365			1161
agt gtt gct tct tgt tta aga gag cgt cct gaa ggc aat cca gca ctt Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Glu Gly Asn Pro Ala Leu 370 375 380 385			1209
gat tgg cca aaa aga aag cat att gct ctg gga tca gca agg ggg ctt Asp Trp Pro Lys Arg Lys His Ile Ala Leu Gly Ser Ala Arg Gly Leu 390 395 400			1257
gcg tat tta cat gat cat tgc gac caa aaa atc att cac cgg gat gtt Ala Tyr Leu His Asp His Cys Asp Gln Lys Ile Ile His Arg Asp Val 405 410 415			1305
aaa gct gct aat ata ttg tta gat gaa gag ttt gaa gct gtt gtt gga Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val Gly 420 425 430			1353
gat ttt ggg ctc gca aaa tta atg aat tat aat gac tcc cat gtg aca Asp Phe Gly Leu Ala Lys Leu Met Asn Tyr Asn Asp Ser His Val Thr 435 440 445			1401
act gct gta cgc ggt aca att ggc cat ata gcg ccc gag tac ctc tcg			1449

P59845PC00 sequence listing																
Thr 450	Ala	Val	Arg	Gly	Thr 455	Ile	Gly	His	Ile	Ala 460	Pro	Glu	Tyr	Leu	Ser 465	
aca Thr	gga Gly	aaa Lys	tct Ser	tct Ser 470	gag Glu	aag Lys	act Thr	gat Asp	gtt Val 475	ttt Phe	ggg Gly	tac Tyr	ggg Gly	gtc Val 480	atg Met	1497
ctt Leu	ctc Leu	gag Glu	ctc Leu 485	atc Ile	act Thr	gga Gly	caa Gln	aag Lys 490	gct Ala	ttc Phe	gat Asp	ctt Leu	gct Ala 495	cgg Arg	ctt Leu	1545
gca Ala	aat Asn	gat Asp 500	gat Asp	gat Asp	atc Ile	atg Met	tta Leu 505	ctc Leu	gac Asp	tgg Trp	gtg Val	aaa Lys 510	gag Glu	gtt Val	ttg Leu	1593
aaa Lys	gag Glu 515	aag Lys	aag Lys	ttg Leu	gaa Glu	agc Ser 520	ctt Leu	gtg Val	gat Asp	gca Ala	gaa Glu 525	ctc Leu	gaa Glu	gga Gly	aag Lys	1641
tac Tyr 530	gtg Val	gaa Glu	aca Thr	gaa Glu	gtg Val 535	gag Glu	cag Gln	ctg Leu	ata Ile	caa Gln 540	atg Met	gct Ala	ctg Leu	ctc Leu	tgc Cys 545	1689
act Thr	caa Gln	agt Ser	tct Ser	gca Ala 550	atg Met	gaa Glu	cgt Arg	cca Pro	aag Lys 555	atg Met	tca Ser	gaa Glu	gta Val	gtg Val 560	aga Arg	1737
atg Met	ctg Leu	gaa Glu	gga Gly 565	gat Asp	ggt Gly	tta Leu	gct Ala	gag Glu 570	aga Arg	tgg Trp	gaa Glu	gaa Glu	tgg Trp 575	caa Gln	aag Lys	1785
gag Glu	gag Glu	atg Met 580	cca Pro	ata Ile	cat His	gat Asp	ttt Phe 585	aac Asn	tat Tyr	caa Gln	gcc Ala	tat Tyr 590	cct Pro	cat His	gct Ala	1833
ggc Gly	act Thr 595	gac Asp	tgg Trp	ctc Leu	atc Ile	ccc Pro 600	tat Tyr	tcc Ser	aat Asn	tcc Ser	ctt Leu 605	atc Ile	gaa Glu	aac Asn	gat Asp	1881
tac Tyr 610	ccc Pro	tcg Ser	ggt Gly	cca Pro 615	aga Arg	taa	ccttttagaa	agggtc	ctttt	ctt	gtggg	ggt				1932
ctt	ca	aa	caag	tata	tata	tata	gatt	ggt	gaa	gttt	taag	at	gca	aaaa	aaaa	1982

<210>	63
<211>	615
<212>	PRT
<213>	Arabidopsis thaliana
<400>	63

Met Glu Gln Arg Ser Leu Leu Cys Phe Leu Tyr Leu Leu Leu Leu Phe
1 5 10 15

Asn Phe Thr Leu Arg Val Ala Gly Asn Ala Glu Gly Asp Ala Leu Thr
20 25 30

Gln Leu Lys Asn Ser Leu Ser Ser Gly Asp Pro Ala Asn Asn Val Leu
35 40 45

P59845PC00 sequence listing

Gln Ser Trp Asp Ala Thr Leu Val Thr Pro Cys Thr Trp Phe His Val
50 55 60

Thr Cys Asn Pro Glu Asn Lys Val Thr Arg Val Asp Leu Gly Asn Ala
65 70 75 80

Lys Leu Ser Gly Lys Leu Val Pro Glu Leu Gly Gln Leu Leu Asn Leu
85 90 95

Gln Tyr Leu Glu Leu Tyr Ser Asn Asn Ile Thr Gly Glu Ile Pro Glu
100 105 110

Glu Leu Gly Asp Leu Val Glu Leu Val Ser Leu Asp Leu Tyr Ala Asn
115 120 125

Ser Ile Ser Gly Pro Ile Pro Ser Ser Leu Gly Lys Leu Gly Lys Leu
130 135 140

Arg Phe Leu Arg Leu Asn Asn Asn Ser Leu Ser Gly Glu Ile Pro Met
145 150 155 160

Thr Leu Thr Ser Val Gln Leu Gln Val Leu Asp Ile Ser Asn Asn Arg
165 170 175

Leu Ser Gly Asp Ile Pro Val Asn Gly Ser Phe Ser Leu Phe Thr Pro
180 185 190

Ile Ser Phe Ala Asn Asn Ser Leu Thr Asp Leu Pro Glu Pro Pro Pro
195 200 205

Thr Ser Thr Ser Pro Thr Pro Pro Pro Ser Gly Gly Gln Met Thr
210 215 220

Ala Ala Ile Ala Gly Gly Val Ala Ala Gly Ala Ala Leu Leu Phe Ala
225 230 235 240

Val Pro Ala Ile Ala Phe Ala Trp Trp Leu Arg Arg Lys Pro Gln Asp
245 250 255

His Phe Phe Asp Val Pro Ala Glu Glu Asp Pro Glu Val His Leu Gly
260 265 270

Gln Leu Lys Arg Phe Thr Leu Arg Glu Leu Leu Val Ala Thr Asp Asn
275 280 285

Phe Ser Asn Lys Asn Val Leu Gly Arg Gly Gly Phe Gly Lys Val Tyr
Page 110

290 P59845PC00 sequence listing 300

Lys Gly Arg Leu Ala Asp Gly Asn Leu Val Ala Val Lys Arg Leu Lys
305 310 315 320

Glu Glu Arg Thr Lys Gly Gly Glu Leu Gln Phe Gln Thr Glu Val Glu
325 330 335

Met Ile Ser Met Ala Val His Arg Asn Leu Leu Arg Leu Arg Gly Phe
340 345 350

Cys Met Thr Pro Thr Glu Arg Leu Leu Val Tyr Pro Tyr Met Ala Asn
355 360 365

Gly Ser Val Ala Ser Cys Leu Arg Glu Arg Pro Glu Gly Asn Pro Ala
370 375 380

Leu Asp Trp Pro Lys Arg Lys His Ile Ala Leu Gly Ser Ala Arg Gly
385 390 395 400

Leu Ala Tyr Leu His Asp His Cys Asp Gln Lys Ile Ile His Arg Asp
405 410 415

Val Lys Ala Ala Asn Ile Leu Leu Asp Glu Glu Phe Glu Ala Val Val
420 425 430

Gly Asp Phe Gly Leu Ala Lys Leu Met Asn Tyr Asn Asp Ser His Val
435 440 445

Thr Thr Ala Val Arg Gly Thr Ile Gly His Ile Ala Pro Glu Tyr Leu
450 455 460

Ser Thr Gly Lys Ser Ser Glu Lys Thr Asp Val Phe Gly Tyr Gly Val
465 470 475 480

Met Leu Leu Glu Leu Ile Thr Gly Gln Lys Ala Phe Asp Leu Ala Arg
485 490 495

Leu Ala Asn Asp Asp Asp Ile Met Leu Leu Asp Trp Val Lys Glu Val
500 505 510

Leu Lys Glu Lys Lys Leu Glu Ser Leu Val Asp Ala Glu Leu Glu Gly
515 520 525

Lys Tyr Val Glu Thr Glu Val Glu Gln Leu Ile Gln Met Ala Leu Leu
530 535 540

P59845PC00 sequence listing

Cys Thr Gln Ser Ser Ala Met Glu Arg Pro Lys Met Ser Glu Val Val
545 550 555 560

Arg Met Leu Glu Gly Asp Gly Leu Ala Glu Arg Trp Glu Glu Trp Gln
565 570 575

Lys Glu Glu Met Pro Ile His Asp Phe Asn Tyr Gln Ala Tyr Pro His
580 585 590

Ala Gly Thr Asp Trp Leu Ile Pro Tyr Ser Asn Ser Leu Ile Glu Asn
595 600 605

Asp Tyr Pro Ser Gly Pro Arg
610 615

<210> 64
<211> 1971
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> CDS
<222> (55)..(1932)

<400> 64
ctgcacctta gagattaata ctctcaagaa aaacaagttt tgattcggac aaag atg 57
Met
1

ttg caa gga aga aga gaa gca aaa aag agt tat gct ttg ttc tct tca 105
Leu Gln Gly Arg Arg Glu Ala Lys Lys Ser Tyr Ala Leu Phe Ser Ser
5 10 15

act ttc ttc ttc ttc ttt atc tgt ttt ctt tct tct tct tct gca gaa 153
Thr Phe Phe Phe Phe Phe Ile Cys Phe Leu Ser Ser Ser Ser Ala Glu
20 25 30

ctc aca gac aaa gtt gtt gcc tta ata gga atc aaa agc tca ctg act 201
Leu Thr Asp Lys Val Val Ala Leu Ile Gly Ile Lys Ser Ser Leu Thr
35 40 45

gat cct cat gga gtt cta atg aat tgg gat gac aca gca gtt gat cca 249
Asp Pro His Gly Val Leu Met Asn Trp Asp Asp Thr Ala Val Asp Pro
50 55 60 65

tgt agc tgg aac atg atc act tgt tct gat ggt ttt gtc ata agg cta 297
Cys Ser Trp Asn Met Ile Thr Cys Ser Asp Gly Phe Val Ile Arg Leu
70 75 80

gaa gct cca agc caa aac tta tca gga act ctt tca tca agt att gga 345
Glu Ala Pro Ser Gln Asn Leu Ser Gly Thr Leu Ser Ser Ser Ile Gly
85 90 95

aat tta aca aat ctt caa act gta tac agg tta ttg cag aac aat tac 393
Asn Leu Thr Asn Leu Gln Thr Val Tyr Arg Leu Leu Gln Asn Asn Tyr
100 105 110

P59845PC00 sequence listing

ata aca gga aac atc cct cat gag att ggg aaa ttg atg aaa ctc aaa Ile Thr Gly Asn Ile Pro His Glu Ile Gly Lys Leu Met Lys Leu Lys 115 120 125	441
aca ctt gat ctc tct acc aat aac ttc act ggt caa atc cca ttc act Thr Leu Asp Leu Ser Thr Asn Asn Phe Thr Gly Gln Ile Pro Phe Thr 130 135 140 145	489
ctt tct tac tcc aaa aat ctt cac agg agg gtt aat aat aac agc ctg Leu Ser Tyr Ser Lys Asn Leu His Arg Arg Val Asn Asn Asn Ser Leu 150 155 160	537
aca gga aca att cct agc tca ttg gca aac atg acc caa ctc act ttt Thr Gly Thr Ile Pro Ser Ser Leu Ala Asn Met Thr Gln Leu Thr Phe 165 170 175	585
ttg gat ttg tct tat aat aac ttg agt gga cca gtt cca aga tca ctt Leu Asp Leu Ser Tyr Asn Asn Leu Ser Gly Pro Val Pro Arg Ser Leu 180 185 190	633
gcc aaa aca ttc aat gtt atg ggc aat tct cag att tgt cca aca gga Ala Lys Thr Phe Asn Val Met Gly Asn Ser Gln Ile Cys Pro Thr Gly 195 200 205	681
act gag aaa gac tgt aat ggg act cag cct aag cca atg tca atc acc Thr Glu Lys Asp Cys Asn Gly Thr Gln Pro Lys Pro Met Ser Ile Thr 210 215 220 225	729
ttg aac agt tct caa aga act aaa aac cgg aaa atc gcg gta gtc ttc Leu Asn Ser Ser Gln Arg Thr Lys Asn Arg Lys Ile Ala Val Val Phe 230 235 240	777
ggt gta agc ttg aca tgt gtt tgc ttg ttg atc att ggc ttt ggt ttt Gly Val Ser Leu Thr Cys Val Cys Leu Leu Ile Ile Gly Phe Gly Phe 245 250 255	825
ctt ctt tgg tgg aga aga aga cat aac aaa caa gta tta ttc ttt gac Leu Leu Trp Arg Arg Arg His Asn Lys Gln Val Leu Phe Phe Asp 260 265 270	873
att aat gag caa aac aag gaa gaa atg tgt cta ggg aat cta agg agg Ile Asn Glu Gln Asn Lys Glu Glu Met Cys Leu Gly Asn Leu Arg Arg 275 280 285	921
ttt aat ttc aaa gaa ctt caa tcc gca act agt aac ttc agc agc aag Phe Asn Phe Lys Glu Leu Gln Ser Ala Thr Ser Asn Phe Ser Ser Lys 290 295 300 305	969
aat ctg gtc gga aaa gga ggg ttt gga aat gtg tat aaa ggt tgt ctt Asn Leu Val Gly Lys Gly Gly Phe Gly Asn Val Tyr Lys Gly Cys Leu 310 315 320	1017
cat gat gga agt atc atc gcg gtg aag aga tta aag gat ata aac aat His Asp Gly Ser Ile Ile Ala Val Lys Arg Leu Lys Asp Ile Asn Asn 325 330 335	1065
ggt ggt gga gag gtt cag ttt cag aca gag ctt gaa atg ata agc ctt Gly Gly Gly Glu Val Gln Phe Gln Thr Glu Leu Glu Met Ile Ser Leu 340 345 350	1113
gcc gtc cac cgg aat ctc ctc cgc tta tac ggt ttc tgt act act tcc Ala Val His Arg Asn Leu Leu Arg Leu Tyr Gly Phe Cys Thr Thr Ser 355 360 365	1161

P59845PC00 sequence listing

tct gaa cgg ctt ctc gtt tat cct tac atg tcc aat ggc agt gtc gct Ser Glu Arg Leu Leu Val Tyr Pro Tyr Met Ser Asn Gly Ser Val Ala 370 375 380 385	1209
tct cgt ctc aaa gct aaa ccg gta ttg gat tgg ggc aca aga aag cga Ser Arg Leu Lys Ala Lys Pro Val Leu Asp Trp Gly Thr Arg Lys Arg 390 395 400	1257
ata gca tta gga gca gga aga ggg ttg ctg tat ttg cat gag caa tgt Ile Ala Leu Gly Ala Gly Arg Gly Leu Leu Tyr Leu His Glu Gln Cys 405 410 415	1305
gat cca aag atc att cac cgt gat gtc aaa gct gcg aac ata ctt ctt Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn Ile Leu Leu 420 425 430	1353
gac gat tac ttt gaa gct gtt gtc gga gat ttc ggg ttg gct aag ctt Asp Asp Tyr Phe Glu Ala Val Val Gly Asp Phe Gly Leu Ala Lys Leu 435 440 445	1401
ttg gat cat gag gag tcg cat gtg aca acc gcc gtg aga gga aca gtg Leu Asp His Glu Glu Ser His Val Thr Thr Ala Val Arg Gly Thr Val 450 455 460 465	1449
ggt cac att gca cct gag tat ctc tca aca gga caa tct tct gag aag Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Gln Ser Ser Glu Lys 470 475 480	1497
aca gat gtg ttc ggt ttc ggg att ctt ctt ctc gaa ttg att act gga Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu Glu Leu Ile Thr Gly 485 490 495	1545
ttg aga gct ctt gaa ttc gga aaa gca gca aac caa aga gga gcg ata Leu Arg Ala Leu Glu Phe Gly Lys Ala Ala Asn Gln Arg Gly Ala Ile 500 505 510	1593
ctt gat tgg gta aag aaa cta caa caa gag aag aag cta gaa cag ata Leu Asp Trp Val Lys Lys Leu Gln Gln Glu Lys Lys Leu Glu Gln Ile 515 520 525	1641
gta gac aag gat ttg aag agc aac tac gat aga ata gaa gtg gaa gaa Val Asp Lys Asp Leu Lys Ser Asn Tyr Asp Arg Ile Glu Val Glu Glu 530 535 540 545	1689
atg gtt caa gtg gct ttg ctt tgt aca cag tat ctt ccc att cac cgt Met Val Gln Val Ala Leu Leu Cys Thr Gln Tyr Leu Pro Ile His Arg 550 555 560	1737
cct aag atg tct gaa gtt gtg aga atg ctt gaa ggc gat ggt ctt gtt Pro Lys Met Ser Glu Val Val Arg Met Leu Glu Gly Asp Gly Leu Val 565 570 575	1785
gag aaa tgg gaa gct tct tct cag aga gca gaa acc aat aga agt tac Glu Lys Trp Glu Ala Ser Ser Gln Arg Ala Glu Thr Asn Arg Ser Tyr 580 585 590	1833
agt aaa cct aac gag ttt tct tcc tct gaa cgt tat tcg gat ctt aca Ser Lys Pro Asn Glu Phe Ser Ser Ser Glu Arg Tyr Ser Asp Leu Thr 595 600 605	1881
gat gat tcc tcg gtg ctg gtt caa gcc atg gag tta tca ggt cca aga Asp Asp Ser Ser Val Leu Val Gln Ala Met Glu Leu Ser Gly Pro Arg 610 615 620 625 630 635 640 645 650	1929

P59845PC00 sequence listing

610 615 620 625 1971
tga caagagaaac tatatgaatg gctttgggtt tgtaaaaaa

<210> 65
<211> 625
<212> PRT
<213> Arabidopsis thaliana

<400> 65

Met Leu Gln Gly Arg Arg Glu Ala Lys Lys Ser Tyr Ala Leu Phe Ser
1 5 10 15

Ser Thr Phe Phe Phe Phe Phe Ile Cys Phe Leu Ser Ser Ser Ser Ala
20 25 30

Glu Leu Thr Asp Lys Val Val Ala Leu Ile Gly Ile Lys Ser Ser Leu
35 40 45

Thr Asp Pro His Gly Val Leu Met Asn Trp Asp Asp Thr Ala Val Asp
50 55 60

Pro Cys Ser Trp Asn Met Ile Thr Cys Ser Asp Gly Phe Val Ile Arg
65 70 75 80

Leu Glu Ala Pro Ser Gln Asn Leu Ser Gly Thr Leu Ser Ser Ser Ile
85 90 95

Gly Asn Leu Thr Asn Leu Gln Thr Val Tyr Arg Leu Leu Gln Asn Asn
100 105 110

Tyr Ile Thr Gly Asn Ile Pro His Glu Ile Gly Lys Leu Met Lys Leu
115 120 125

Lys Thr Leu Asp Leu Ser Thr Asn Asn Phe Thr Gly Gln Ile Pro Phe
130 135 140

Thr Leu Ser Tyr Ser Lys Asn Leu His Arg Arg Val Asn Asn Asn Ser
145 150 155 160

Leu Thr Gly Thr Ile Pro Ser Ser Leu Ala Asn Met Thr Gln Leu Thr
165 170 175

Phe Leu Asp Leu Ser Tyr Asn Asn Leu Ser Gly Pro Val Pro Arg Ser
180 185 190

Leu Ala Lys Thr Phe Asn Val Met Gly Asn Ser Gln Ile Cys Pro Thr
195 200 205

P59845PC00 sequence listing

Gly Thr Glu Lys Asp Cys Asn Gly Thr Gln Pro Lys Pro Met Ser Ile
210 215 220

Thr Leu Asn Ser Ser Gln Arg Thr Lys Asn Arg Lys Ile Ala Val Val
225 230 235 240

Phe Gly Val Ser Leu Thr Cys Val Cys Leu Leu Ile Ile Gly Phe Gly
245 250 255

Phe Leu Leu Trp Trp Arg Arg Arg His Asn Lys Gln Val Leu Phe Phe
260 265 270

Asp Ile Asn Glu Gln Asn Lys Glu Glu Met Cys Leu Gly Asn Leu Arg
275 280 285

Arg Phe Asn Phe Lys Glu Leu Gln Ser Ala Thr Ser Asn Phe Ser Ser
290 295 300

Lys Asn Leu Val Gly Lys Gly Gly Phe Gly Asn Val Tyr Lys Gly Cys
305 310 315 320

Leu His Asp Gly Ser Ile Ile Ala Val Lys Arg Leu Lys Asp Ile Asn
325 330 335

Asn Gly Gly Gly Glu Val Gln Phe Gln Thr Glu Leu Glu Met Ile Ser
340 345 350

Leu Ala Val His Arg Asn Leu Leu Arg Leu Tyr Gly Phe Cys Thr Thr
355 360 365

Ser Ser Glu Arg Leu Leu Val Tyr Pro Tyr Met Ser Asn Gly Ser Val
370 375 380

Ala Ser Arg Leu Lys Ala Lys Pro Val Leu Asp Trp Gly Thr Arg Lys
385 390 395 400

Arg Ile Ala Leu Gly Ala Gly Arg Gly Leu Leu Tyr Leu His Glu Gln
405 410 415

Cys Asp Pro Lys Ile Ile His Arg Asp Val Lys Ala Ala Asn Ile Leu
420 425 430

Leu Asp Asp Tyr Phe Glu Ala Val Val Gly Asp Phe Gly Leu Ala Lys
435 440 445

Leu Leu Asp His Glu Glu Ser His Val Thr Thr Ala Val Arg Gly Thr
450 455 460

P59845PC00 sequence listing

Val Gly His Ile Ala Pro Glu Tyr Leu Ser Thr Gly Gln Ser Ser Glu
 465 470 475 480

Lys Thr Asp Val Phe Gly Phe Gly Ile Leu Leu Leu Glu Leu Ile Thr
 485 490 495

Gly Leu Arg Ala Leu Glu Phe Gly Lys Ala Ala Asn Gln Arg Gly Ala
 500 505 510

Ile Leu Asp Trp Val Lys Lys Leu Gln Gln Glu Lys Lys Leu Glu Gln
 515 520 525

Ile Val Asp Lys Asp Leu Lys Ser Asn Tyr Asp Arg Ile Glu Val Glu
 530 535 540

Glu Met Val Gln Val Ala Leu Leu Cys Thr Gln Tyr Leu Pro Ile His
 545 550 555

Arg Pro Lys Met Ser Glu Val Val Arg Met Leu Glu Gly Asp Gly Leu
 565 570 575

Val Glu Lys Trp Glu Ala Ser Ser Gln Arg Ala Glu Thr Asn Arg Ser
 580 585 590

Tyr Ser Lys Pro Asn Glu Phe Ser Ser Ser Glu Arg Tyr Ser Asp Leu
 595 600 605

Thr Asp Asp Ser Ser Val Leu Val Gln Ala Met Glu Leu Ser Gly Pro
 610 615 620

Arg
 625

<210> 66
 <211> 260
 <212> PRT
 <213> Arabidopsis thaliana
 <400> 66

Met Ala Glu Arg Val Tyr Pro Ala Asp Ser Pro Pro Gln Ser Gly Gln
 1 5 10 15

Phe Ser Gly Asn Phe Ser Ser Gly Glu Phe Pro Lys Lys Pro Ala Pro
 20 25 30

Pro Pro Ser Thr Tyr Val Ile Gln Val Pro Lys Asp Gln Ile Tyr Arg
 35 40 45

P59845PC00 sequence listing

Ile Pro Pro Pro Glu Asn Ala His Arg Phe Glu Gln Leu Ser Arg Lys
50 55 60

Lys Thr Asn Arg Ser Asn Cys Arg Cys Cys Phe Cys Ser Phe Leu Ala
65 70 75 80

Ala Val Phe Ile Leu Ile Val Leu Ala Gly Ile Ser Phe Ala Val Leu
85 90 95

Tyr Leu Ile Tyr Arg Pro Glu Ala Pro Lys Tyr Ser Ile Glu Gly Phe
100 105 110

Ser Val Ser Gly Ile Asn Leu Asn Ser Thr Ser Pro Ile Ser Pro Ser
115 120 125

Phe Asn Val Thr Val Arg Ser Arg Asn Gly Asn Gly Lys Ile Gly Val
130 135 140

Tyr Tyr Glu Lys Glu Ser Ser Val Asp Val Tyr Tyr Asn Asp Val Asp
145 150 155 160

Ile Ser Asn Gly Val Met Pro Val Phe Tyr Gln Pro Ala Lys Asn Val
165 170 175

Thr Val Val Lys Leu Val Leu Ser Gly Ser Lys Ile Gln Leu Thr Ser
180 185 190

Gly Met Arg Lys Glu Met Arg Asn Glu Val Ser Lys Lys Thr Val Pro
195 200 205

Phe Lys Leu Lys Ile Lys Ala Pro Val Lys Ile Lys Phe Gly Ser Val
210 215 220

Lys Thr Trp Thr Met Ile Val Asn Val Asp Cys Asp Val Thr Val Asp
225 230 235 240

Lys Leu Thr Ala Pro Ser Arg Ile Val Ser Arg Lys Cys Ser His Asp
245 250 255

Val Asp Leu Trp
260

<210> 67
<211> 281
<212> PRT
<213> Arabidopsis thaliana

P59845PC00 sequence listing

<400> 67

Met Thr Val Glu Lys Pro Gln Glu Met Thr Gly Asp Thr Asn Ser Asp
1 5 10 15

Gly Phe Leu Thr Asn Lys Asp Val His Arg Ile Lys His Pro Ser Leu
20 25 30

Asp Thr Asn Asp Ser Ser Ser Ser Arg Tyr Ser Val Asp Ser Gln Lys
35 40 45

Ser Arg Ile Gly Pro Pro Pro Gly Thr Tyr Val Ile Lys Leu Pro Lys
50 55 60

Asp Gln Ile Tyr Arg Val Pro Pro Pro Glu Asn Ala His Arg Tyr Glu
65 70 75 80

Tyr Leu Ser Arg Arg Lys Thr Asn Lys Ser Cys Cys Arg Arg Cys Leu
85 90 95

Cys Tyr Ser Leu Ser Ala Leu Leu Ile Ile Ile Val Leu Ala Ala Ile
100 105 110

Ala Phe Gly Phe Phe Tyr Leu Val Tyr Gln Pro His Lys Pro Gln Phe
115 120 125

Ser Val Ser Gly Val Ser Val Thr Gly Ile Asn Leu Thr Ser Ser Ser
130 135 140

Pro Phe Ser Pro Val Ile Arg Ile Lys Leu Arg Ser Gln Asn Val Lys
145 150 155 160

Gly Lys Leu Gly Leu Ile Tyr Glu Lys Gly Asn Glu Ala Asp Val Phe
165 170 175

Phe Asn Gly Thr Lys Leu Gly Asn Gly Glu Phe Thr Ala Phe Lys Gln
180 185 190

Pro Ala Gly Asn Val Thr Val Ile Val Thr Val Leu Lys Gly Ser Ser
195 200 205

Val Lys Leu Lys Ser Ser Ser Arg Lys Glu Leu Thr Glu Ser Gln Lys
210 215 220

Lys Gly Lys Val Pro Phe Gly Leu Arg Ile Lys Ala Pro Val Lys Phe
225 230 235 240

Lys Val Gly Ser Val Thr Thr Trp Thr Met Thr Ile Thr Val Asp Cys
Page 119

P59845PC00 sequence listing

245

250

255

Lys Ile Thr Val Asp Lys Leu Thr Ala Ser Ala Thr Val Lys Thr Glu
260 265 270

Asn Cys Glu Thr Gly Leu Ser Leu Leu
275 280

<210> 68

<211> 252

<212> PRT

<213> Arabidopsis thaliana

<400> 68

Met Ser Gln His Gln Lys Ile Tyr Pro Val Gln Asp Pro Glu Ala Ala
1 5 10 15

Thr Ala Arg Pro Thr Ala Pro Leu Val Pro Arg Gly Ser Ser Arg Ser
20 25 30

Glu His Gly Asp Pro Ser Lys Val Pro Leu Asn Gln Arg Pro Gln Arg
35 40 45

Phe Val Pro Leu Ala Pro Pro Lys Lys Arg Arg Ser Cys Cys Cys Arg
50 55 60

Cys Phe Cys Tyr Thr Phe Cys Phe Leu Leu Leu Leu Val Val Ala Val
65 70 75 80

Gly Ala Ser Ile Gly Ile Leu Tyr Leu Val Phe Lys Pro Lys Leu Pro
85 90 95

Asp Tyr Ser Ile Asp Arg Leu Gln Leu Thr Arg Phe Ala Leu Asn Gln
100 105 110

Asp Ser Ser Leu Thr Thr Ala Phe Asn Val Thr Ile Thr Ala Lys Asn
115 120 125

Pro Asn Glu Lys Ile Gly Ile Tyr Tyr Glu Asp Gly Ser Lys Ile Thr
130 135 140

Val Trp Tyr Met Glu His Gln Leu Ser Asn Gly Ser Leu Pro Lys Phe
145 150 155 160

Tyr Gln Gly His Glu Asn Thr Thr Val Ile Tyr Val Glu Met Thr Gly
165 170 175

Gln Thr Gln Asn Ala Ser Gly Leu Arg Thr Thr Leu Glu Glu Gln Gln
Page 120

P59845PC00 sequence listing

180

185

190

Gln Arg Thr Gly Asn Ile Pro Leu Arg Ile Arg Val Asn Gln Pro Val
195 200 205

Arg Val Lys Phe Gly Lys Leu Lys Leu Phe Glu Val Arg Phe Leu Val
210 215 220

Arg Cys Gly Val Phe Val Asp Ser Leu Ala Thr Asn Asn Val Ile Lys
225 230 235 240

Ile Gln Ser Ser Ser Cys Lys Phe Arg Leu Arg Leu
245 250

<210> 69

<211> 248

<212> PRT

<213> Arabidopsis thaliana

<400> 69

Met Ser Asp His Gln Lys Ile His Pro Val Ser Asp Pro Glu Ala Pro
1 5 10 15

Pro His Pro Thr Ala Pro Leu Val Pro Arg Gly Ser Ser Arg Ser Glu
20 25 30

His Gly Asp Pro Thr Lys Thr Gln Gln Ala Ala Pro Leu Asp Pro Pro
35 40 45

Arg Glu Lys Lys Gly Ser Arg Ser Cys Trp Cys Arg Cys Val Cys Tyr
50 55 60

Thr Leu Leu Val Leu Phe Leu Leu Ile Val Ile Val Gly Ala Ile Val
65 70 75 80

Gly Ile Leu Tyr Leu Val Phe Arg Pro Lys Phe Pro Asp Tyr Asn Ile
85 90 95

Asp Arg Leu Gln Leu Thr Arg Phe Gln Leu Asn Gln Asp Leu Ser Leu
100 105 110

Ser Thr Ala Phe Asn Val Thr Ile Thr Ala Lys Asn Pro Asn Glu Lys
115 120 125

Ile Gly Ile Tyr Tyr Glu Asp Gly Ser Lys Ile Ser Val Leu Tyr Met
130 135 140

Gln Thr Arg Ile Ser Asn Gly Ser Leu Pro Lys Phe Tyr Gln Gly His
Page 121

P59845PC00 sequence listing

145 150 155 160

Glu Asn Thr Thr Ile Ile Leu Val Glu Met Thr Gly Phe Thr Gln Asn
165 170 175

Ala Thr Ser Leu Met Thr Thr Leu Gln Glu Gln Gln Arg Leu Thr Gly
180 185 190

Ser Ile Pro Leu Arg Ile Arg Val Thr Gln Pro Val Arg Ile Lys Leu
195 200 205

Gly Lys Leu Lys Leu Met Lys Val Arg Phe Leu Val Arg Cys Gly Val
210 215 220

Ser Val Asp Ser Leu Ala Ala Asn Ser Val Ile Arg Val Arg Ser Ser
225 230 235 240

Asn Cys Lys Tyr Arg Phe Arg Leu
245

<210> 70
<211> 239
<212> PRT
<213> Arabidopsis thaliana

<400> 70

Met Gly Asp Gln Gln Lys Ile His Pro Val Leu Gln Met Glu Ala Asn
1 5 10 15

Lys Thr Lys Thr Thr Thr Pro Ala Pro Gly Lys Thr Val Leu Leu Pro
20 25 30

Val Gln Arg Pro Ile Pro Pro Pro Val Ile Pro Ser Lys Asn Arg Asn
35 40 45

Met Cys Cys Lys Ile Phe Cys Trp Val Leu Ser Leu Leu Val Ile Ala
50 55 60

Leu Ile Ala Leu Ala Ile Ala Val Ala Val Val Tyr Phe Val Phe His
65 70 75 80

Pro Lys Leu Pro Ser Tyr Glu Val Asn Ser Leu Arg Val Thr Asn Leu
85 90 95

Gly Ile Asn Leu Asp Leu Ser Leu Ser Ala Glu Phe Lys Val Glu Ile
100 105 110

Thr Ala Arg Asn Pro Asn Glu Lys Ile Gly Ile Tyr Tyr Glu Lys Gly
Page 122

P59845PC00 sequence listing

115

120

125

Gly His Ile Gly Val Trp Tyr Asp Lys Thr Lys Leu Cys Glu Gly Pro
130 135 140

Ile Pro Arg Phe Tyr Gln Gly His Arg Asn Val Thr Lys Leu Asn Val
145 150 155 160

Ala Leu Thr Gly Arg Ala Gln Tyr Gly Asn Thr Val Leu Ala Ala Leu
165 170 175

Gln Gln Gln Gln Gln Thr Gly Arg Val Pro Leu Asp Leu Lys Val Asn
180 185 190

Ala Pro Val Ala Ile Lys Leu Gly Asn Leu Lys Met Lys Lys Ile Arg
195 200 205

Ile Leu Gly Ser Cys Lys Leu Val Val Asp Ser Leu Ser Thr Asn Asn
210 215 220

Asn Ile Asn Ile Lys Ala Ser Asp Cys Ser Phe Lys Ala Lys Leu
225 230 235

<210> 71
<211> 231
<212> PRT
<213> Arabidopsis thaliana

<400> 71

Met Ala Asp Leu Asn Gly Ala Tyr Tyr Gly Pro Ser Ile Pro Pro Pro
1 5 10 15

Lys Lys Val Ser His Ser His Gly Arg Arg Gly Gly Gly Cys Gly Cys
20 25 30

Leu Gly Asp Cys Leu Gly Cys Cys Gly Cys Cys Ile Leu Ser Val Ile
35 40 45

Phe Asn Ile Leu Ile Thr Ile Ala Val Leu Leu Gly Ile Ala Ala Leu
50 55 60

Ile Ile Trp Leu Ile Phe Arg Pro Asn Ala Ile Lys Phe His Val Thr
65 70 75 80

Asp Ala Lys Leu Thr Glu Phe Thr Leu Asp Pro Thr Asn Asn Leu Arg
85 90 95

Tyr Asn Leu Asp Leu Asn Phe Thr Ile Arg Asn Pro Asn Arg Arg Ile
Page 123

P59845PC00 sequence listing

100

105

110

Gly Val Tyr Tyr Asp Glu Ile Glu Val Arg Gly Tyr Tyr Gly Asp Gln
115 120 125

Arg Phe Gly Met Ser Asn Asn Ile Ser Lys Phe Tyr Gln Gly His Lys
130 135 140

Asn Thr Thr Val Val Gly Thr Lys Leu Val Gly Gln Gln Leu Val Leu
145 150 155 160

Leu Asp Gly Gly Glu Arg Lys Asp Leu Asn Glu Asp Val Asn Ser Gln
165 170 175

Ile Tyr Arg Ile Asp Ala Lys Leu Arg Leu Lys Ile Arg Phe Lys Phe
180 185 190

Gly Leu Ile Lys Ser Trp Arg Phe Lys Pro Lys Ile Lys Cys Asp Leu
195 200 205

Lys Val Pro Leu Thr Ser Asn Ser Thr Ser Gly Phe Val Phe Gln Pro
210 215 220

Thr Lys Cys Asp Val Asp Phe
225 230

<210> 72
<211> 287
<212> PRT
<213> Arabidopsis thaliana

<400> 72

Met Thr Asp Arg Val Phe Pro Ala Ser Lys Pro Pro Thr Ala Thr Asn
1 5 10 15

Gly Ala Pro Pro Val Gly Ser Ile Pro Pro Pro Pro Ala Pro Ala Thr
20 25 30

Val Thr Ser Asn Gly Thr Thr Asn Gly Met Ala Asn Gln Lys Pro Gln
35 40 45

Val Tyr Ile Pro Ala Asn Arg Pro Val Tyr Arg Pro Gln Pro Tyr Ser
50 55 60

Arg Arg His His His Gln Ser Arg Pro Ser Cys Arg Arg Ile Cys Cys
65 70 75 80

Cys Cys Cys Phe Trp Ser Ile Leu Ile Ile Leu Ile Leu Ala Leu Met
Page 124

P59845PC00 sequence listing

85

90

95

Thr Ala Ile Ala Ala Thr Ala Met Tyr Val Ile Tyr His Pro Arg Pro
100 105 110

Pro Ser Phe Ser Val Pro Ser Ile Arg Ile Ser Arg Val Asn Leu Thr
115 120 125

Thr Ser Ser Asp Ser Ser Val Ser His Leu Ser Ser Phe Phe Asn Phe
130 135 140

Thr Leu Ile Ser Glu Asn Pro Asn Gln His Leu Ser Phe Ser Tyr Asp
145 150 155 160

Pro Phe Thr Val Thr Val Asn Ser Ala Lys Ser Gly Thr Met Leu Gly
165 170 175

Asn Gly Thr Val Pro Ala Phe Phe Ser Asp Asn Gly Asn Lys Thr Ser
180 185 190

Phe His Gly Val Ile Ala Thr Ser Thr Ala Ala Arg Glu Leu Asp Pro
195 200 205

Asp Glu Ala Lys His Leu Arg Ser Asp Leu Thr Arg Ala Arg Val Gly
210 215 220

Tyr Glu Ile Glu Met Arg Thr Lys Val Lys Met Ile Met Gly Lys Leu
225 230 235 240

Lys Ser Glu Gly Val Glu Ile Lys Val Thr Cys Glu Gly Phe Glu Gly
245 250 255

Thr Ile Pro Lys Gly Lys Thr Pro Ile Val Ala Thr Ser Lys Lys Thr
260 265 270

Lys Cys Lys Ser Asp Leu Ser Val Lys Val Trp Lys Trp Ser Phe
275 280 285

<210> 73

<211> 264

<212> PRT

<213> Arabidopsis thaliana

<400> 73

Met Thr Asp Asp Arg Val Tyr Pro Ala Ser Lys Pro Pro Ala Ile Val
1 5 10 15

Gly Gly Gly Ala Pro Thr Thr Asn Pro Thr Phe Pro Ala Asn Lys Ala
Page 125

P59845PC00 sequence listing

20

25

30

Gln Leu Tyr Asn Ala Asn Arg Pro Ala Tyr Arg Pro Pro Ala Gly Arg
35 40 45

Arg Arg Thr Ser His Thr Arg Gly Cys Cys Cys Arg Cys Cys Cys Trp
50 55 60

Thr Ile Phe Val Ile Ile Leu Leu Leu Leu Ile Val Ala Ala Ala Ser
65 70 75 80

Ala Val Val Tyr Leu Ile Tyr Arg Pro Gln Arg Pro Ser Phe Thr Val
85 90 95

Ser Glu Leu Lys Ile Ser Thr Leu Asn Phe Thr Ser Ala Val Arg Leu
100 105 110

Thr Thr Ala Ile Ser Leu Ser Val Ile Ala Arg Asn Pro Asn Lys Asn
115 120 125

Val Gly Phe Ile Tyr Asp Val Thr Asp Ile Thr Leu Tyr Lys Ala Ser
130 135 140

Thr Gly Gly Asp Asp Asp Val Val Ile Gly Lys Gly Thr Ile Ala Ala
145 150 155 160

Phe Ser His Gly Lys Lys Asn Thr Thr Thr Leu Arg Ser Thr Ile Gly
165 170 175

Ser Pro Pro Asp Glu Leu Asp Glu Ile Ser Ala Gly Lys Leu Lys Gly
180 185 190

Asp Leu Lys Ala Lys Lys Ala Val Ala Ile Lys Ile Val Leu Asn Ser
195 200 205

Lys Val Lys Val Lys Met Gly Ala Leu Lys Thr Pro Lys Ser Gly Ile
210 215 220

Arg Val Thr Cys Glu Gly Ile Lys Val Val Ala Pro Thr Gly Lys Lys
225 230 235 240

Ala Thr Thr Ala Thr Thr Ser Ala Ala Lys Cys Lys Val Asp Pro Arg
245 250 255

Phe Lys Ile Trp Lys Ile Thr Phe
260

P59845PC00 sequence listing

<210> 74

<211> 240

<212> PRT

<213> Arabidopsis thaliana

<400> 74

Met Gly Ser Lys Gln Pro Tyr Leu Asn Gly Ala Tyr Tyr Gly Pro Ser
1 5 10 15

Ile Pro Pro Pro Lys Ala His Arg Ser Tyr Asn Ser Pro Gly Phe
20 25 30

Gly Cys Cys Cys Phe Ser Cys Leu Gly Ser Cys Leu Arg Cys Cys Gly
35 40 45

Cys Cys Ile Leu Ser Leu Ile Cys Asn Ile Leu Ile Ala Val Ala Val
50 55 60

Ile Leu Gly Val Ala Ala Leu Ile Leu Trp Leu Ile Phe Arg Pro Asn
65 70 75 80

Ala Val Lys Phe Tyr Val Ala Asp Ala Asn Leu Asn Arg Phe Ser Phe
85 90 95

Asp Pro Asn Asn Asn Leu His Tyr Ser Leu Asp Leu Asn Phe Thr Ile
100 105 110

Arg Asn Pro Asn Gln Arg Val Gly Val Tyr Tyr Asp Glu Phe Ser Val
115 120 125

Ser Gly Tyr Tyr Gly Asp Gln Arg Phe Gly Ser Ala Asn Val Ser Ser
130 135 140

Phe Tyr Gln Gly His Lys Asn Thr Thr Val Ile Leu Thr Lys Ile Glu
145 150 155 160

Gly Gln Asn Leu Val Val Leu Gly Asp Gly Ala Arg Thr Asp Leu Lys
165 170 175

Asp Asp Glu Lys Ser Gly Ile Tyr Arg Ile Asn Ala Lys Leu Arg Leu
180 185 190

Ser Val Arg Phe Lys Phe Trp Phe Ile Lys Ser Trp Lys Leu Lys Pro
195 200 205

Lys Ile Lys Cys Asp Asp Leu Lys Ile Pro Leu Gly Ser Ser Asn Ser
210 215 220

P59845PC00 sequence listing

Thr Gly Gly Phe Lys Phe Gln Pro Val Gln Cys Asp Phe Asp Leu Ser
225 230 235 240

<210> 75
<211> 291
<212> PRT
<213> Arabidopsis thaliana

<400> 75

Met Glu Gly Pro Arg Arg Pro Pro Ser Ala Thr Ala Pro Asp Ser Asp
1 5 10 15

Asp Asp Lys Pro Asp Asp Pro Pro Ser Val Trp His Arg Pro Thr Ser
20 25 30

Ser Leu Pro Ala Leu Pro Ser Leu Asp Pro Pro Ser His Gly Ser His
35 40 45

His Trp Arg Asn His Ser Leu Asn Leu Ser Pro Leu Pro Thr Thr Ser
50 55 60

Ser Pro Pro Leu Pro Pro Pro Asp Ser Ile Pro Glu Leu Glu Thr Tyr
65 70 75 80

Val Val Gln Val Pro Arg Asp Gln Val Tyr Trp Thr Pro Pro Pro Glu
85 90 95

His Ala Lys Tyr Val Glu Lys Arg Ser Lys Asn Pro Glu Lys Asn Lys
100 105 110

Lys Lys Gly Cys Ser Lys Arg Leu Leu Trp Phe Phe Ile Ile Leu Val
115 120 125

Ile Phe Gly Phe Leu Leu Gly Ala Ile Ile Leu Ile Leu His Phe Ala
130 135 140

Phe Asn Pro Thr Leu Pro Val Phe Ala Val Glu Arg Leu Thr Val Asn
145 150 155 160

Pro Ser Asn Phe Glu Val Thr Leu Arg Ala Glu Asn Pro Thr Ser Asn
165 170 175

Met Gly Val Arg Tyr Met Met Glu Lys Asn Gly Val Val Ser Leu Thr
180 185 190

Tyr Lys Asn Lys Ser Leu Gly Ser Gly Lys Phe Pro Gly Leu Ser Gln
195 200 205

P59845PC00 sequence listing

Ala Ala Ser Gly Ser Asp Lys Val Asn Val Lys Leu Asn Gly Ser Thr
210 215 220

Lys Asn Ala Val Val Gln Pro Arg Gly Ser Lys Gln Pro Val Val Leu
225 230 235 240

Met Leu Asn Met Glu Leu Lys Ala Glu Tyr Glu Ala Gly Pro Val Lys
245 250 255

Arg Asn Lys Glu Val Val Val Thr Cys Asp Val Lys Val Lys Gly Leu
260 265 270

Leu Asp Ala Lys Lys Val Glu Ile Val Ser Glu Asn Cys Glu Ser Glu
275 280 285

Phe Lys Asn
290

<210> 76
<211> 207
<212> PRT
<213> Arabidopsis thaliana

<400> 76

Met Cys His Lys Pro Lys Leu Glu Leu Met Pro Met Glu Thr Ser Pro
1 5 10 15

Ala Gln Pro Leu Arg Arg Pro Ser Leu Ile Cys Tyr Ile Phe Leu Val
20 25 30

Ile Leu Thr Leu Ile Phe Met Ala Ala Val Gly Phe Leu Ile Thr Trp
35 40 45

Leu Glu Thr Lys Pro Lys Lys Leu Arg Tyr Thr Val Glu Asn Ala Ser
50 55 60

Val Gln Asn Phe Asn Leu Thr Asn Asp Asn His Met Ser Ala Thr Phe
65 70 75 80

Gln Phe Thr Ile Gln Ser His Asn Pro Asn His Arg Ile Ser Val Tyr
85 90 95

Tyr Ser Ser Val Glu Ile Phe Val Lys Phe Lys Asp Gln Thr Leu Ala
100 105 110

Phe Asp Thr Val Glu Pro Phe His Gln Pro Arg Met Asn Val Lys Gln
115 120 125

P59845PC00 sequence listing

Ile Asp Glu Thr Leu Ile Ala Glu Asn Val Ala Val Ser Lys Ser Asn
130 135 140

Gly Lys Asp Leu Arg Ser Gln Asn Ser Leu Gly Lys Ile Gly Phe Glu
145 150 155 160

Val Phe Val Lys Ala Arg Val Arg Phe Lys Val Gly Ile Trp Lys Ser
165 170 175

Ser His Arg Thr Ala Lys Ile Lys Cys Ser His Val Thr Val Ser Leu
180 185 190

Ser Gln Pro Asn Lys Ser Gln Asn Ser Ser Cys Asp Ala Asp Ile
195 200 205

<210> 77

<211> 227

<212> PRT

<213> Arabidopsis thaliana

<400> 77

Met Ala Ala Glu Gln Pro Leu Asn Gly Ala Phe Tyr Gly Pro Ser Val
1 5 10 15

Pro Pro Pro Ala Pro Lys Gly Tyr Tyr Arg Arg Gly His Gly Arg Gly
20 25 30

Cys Gly Cys Cys Leu Leu Ser Leu Phe Val Lys Val Ile Ile Ser Leu
35 40 45

Ile Val Ile Leu Gly Val Ala Ala Leu Ile Phe Trp Leu Ile Val Arg
50 55 60

Pro Arg Ala Ile Lys Phe His Val Thr Asp Ala Ser Leu Thr Arg Phe
65 70 75 80

Asp His Thr Ser Pro Asp Asn Ile Leu Arg Tyr Asn Leu Ala Leu Thr
85 90 95

Val Pro Val Arg Asn Pro Asn Lys Arg Ile Gly Leu Tyr Tyr Asp Arg
100 105 110

Ile Glu Ala His Ala Tyr Tyr Glu Gly Lys Arg Phe Ser Thr Ile Thr
115 120 125

Leu Thr Pro Phe Tyr Gln Gly His Lys Asn Thr Thr Val Leu Thr Pro
130 135 140

P59845PC00 sequence listing

Thr Phe Gln Gly Gln Asn Leu Val Ile Phe Asn Ala Gly Gln Ser Arg
145 150 155 160

Thr Leu Asn Ala Glu Arg Ile Ser Gly Val Tyr Asn Ile Glu Ile Lys
165 170 175

Phe Arg Leu Arg Val Arg Phe Lys Leu Gly Asp Leu Lys Phe Arg Arg
180 185 190

Ile Lys Pro Lys Val Asp Cys Asp Asp Leu Arg Leu Pro Leu Ser Thr
195 200 205

Ser Asn Gly Thr Thr Thr Thr Ser Thr Val Phe Pro Ile Lys Cys Asp
210 215 220

Phe Asp Phe
225

<210> 78
<211> 254
<212> PRT
<213> Arabidopsis thaliana
<400> 78

Met Ala Asp Tyr Gln Met Asn Pro Val Leu Gln Lys Pro Pro Gly Tyr
1 5 10 15

Arg Asp Pro Asn Met Ser Ser Pro Pro Pro Pro Pro Pro Ile Gln
20 25 30

Gln Gln Pro Met Arg Lys Ala Val Pro Met Pro Thr Ser Tyr Arg Pro
35 40 45

Lys Lys Lys Arg Arg Ser Cys Cys Arg Phe Cys Cys Cys Ile Cys
50 55 60

Ile Thr Leu Val Leu Phe Ile Phe Leu Leu Leu Val Gly Thr Ala Val
65 70 75 80

Phe Tyr Leu Trp Phe Asp Pro Lys Leu Pro Thr Phe Ser Leu Ala Ser
85 90 95

Phe Arg Leu Asp Gly Phe Lys Leu Ala Asp Asp Pro Asp Gly Ala Ser
100 105 110

Leu Ser Ala Thr Ala Val Ala Arg Val Glu Met Lys Asn Pro Asn Ser
115 120 125

P59845PC00 sequence listing

Lys Leu Val Phe Tyr Tyr Gly Asn Thr Ala Val Asp Leu Ser Val Gly
130 135 140

Ser Gly Asn Asp Glu Thr Gly Met Gly Glu Thr Thr Met Asn Gly Phe
145 150 155 160

Arg Gln Gly Pro Lys Asn Ser Thr Ser Val Lys Val Glu Thr Thr Val
165 170 175

Lys Asn Gln Leu Val Glu Arg Gly Leu Ala Lys Arg Leu Ala Ala Lys
180 185 190

Phe Gln Ser Lys Asp Leu Val Ile Asn Val Val Ala Lys Thr Lys Val
195 200 205

Gly Leu Gly Val Gly Gly Ile Lys Ile Gly Met Leu Ala Val Asn Leu
210 215 220

Arg Cys Gly Gly Val Ser Leu Asn Lys Leu Asp Thr Asp Ser Pro Lys
225 230 235 240

Cys Ile Leu Asn Thr Leu Lys Trp Tyr Lys Ile Ile Ser Asn
245 250

<210> 79
<211> 226
<212> PRT
<213> Arabidopsis thaliana

<400> 79

Met Thr Pro Asp Arg Thr Thr Ile Pro Ile Arg Thr Ser Pro Val Pro
1 5 10 15

Arg Ala Gln Pro Met Lys Arg His His Ser Ala Ser Tyr Tyr Ala His
20 25 30

Arg Val Arg Glu Ser Leu Ser Thr Arg Ile Ser Lys Phe Ile Cys Ala
35 40 45

Met Phe Leu Leu Val Leu Phe Phe Val Gly Val Ile Ala Phe Ile Leu
50 55 60

Trp Leu Ser Leu Arg Pro His Arg Pro Arg Phe His Ile Gln Asp Phe
65 70 75 80

Val Val Gln Gly Leu Asp Gln Pro Thr Gly Val Glu Asn Ala Arg Ile
85 90 95

P59845PC00 sequence listing

Ala Phe Asn Val Thr Ile Leu Asn Pro Asn Gln His Met Gly Val Tyr
100 105 110

Phe Asp Ser Met Glu Gly Ser Ile Tyr Tyr Lys Asp Gln Arg Val Gly
115 120 125

Leu Ile Pro Leu Leu Asn Pro Phe Phe Gln Gln Pro Thr Asn Thr Thr
130 135 140

Ile Val Thr Gly Thr Leu Thr Gly Ala Ser Leu Thr Val Asn Ser Asn
145 150 155 160

Arg Trp Thr Glu Phe Ser Asn Asp Arg Ala Gln Gly Thr Val Gly Phe
165 170 175

Arg Leu Asp Ile Val Ser Thr Ile Arg Phe Lys Leu His Arg Trp Ile
180 185 190

Ser Lys His His Arg Met His Ala Asn Cys Asn Ile Val Val Gly Arg
195 200 205

Asp Gly Leu Ile Leu Pro Lys Phe Asn His Lys Arg Cys Pro Val Tyr
210 215 220

Phe Thr
225

<210> 80
<211> 238
<212> PRT
<213> Arabidopsis thaliana

<400> 80

Met Ala Asn Gly Leu Asn Gly Ala Ser Tyr Gly Pro Pro Ile Lys Pro
1 5 10 15

Pro Val Lys Thr Tyr Tyr Ser His Gly Arg Arg Gly Ser Asp Val Gly
20 25 30

Cys Gly Ile Cys Gly Cys Phe Ser Ser Cys Leu Leu Cys Cys Gly Gly
35 40 45

Cys Leu Val Asn Ile Ile Cys Asn Ile Leu Ile Gly Val Leu Val Cys
50 55 60

Leu Gly Val Val Ala Leu Ile Leu Trp Phe Ile Leu Arg Pro Asn Val
65 70 75 80

P59845PC00 sequence listing

Val Lys Phe Gln Val Thr Glu Ala Asp Leu Thr Arg Phe Glu Phe Asp
85 90 95

Pro Arg Ser His Asn Leu His Tyr Asn Ile Ser Leu Asn Phe Ser Ile
100 105 110

Arg Asn Pro Asn Gln Arg Leu Gly Ile His Tyr Asp Gln Leu Glu Val
115 120 125

Arg Gly Tyr Tyr Gly Asp Gln Arg Phe Ser Ala Ala Asn Met Thr Ser
130 135 140

Phe Tyr Gln Gly His Lys Asn Thr Thr Val Val Gly Thr Glu Leu Asn
145 150 155 160

Gly Gln Lys Leu Val Leu Leu Gly Ala Gly Gly Arg Arg Asp Phe Arg
165 170 175

Glu Asp Arg Arg Ser Gly Val Tyr Arg Ile Asp Val Lys Leu Arg Phe
180 185 190

Lys Leu Arg Phe Lys Phe Gly Phe Leu Asn Ser Trp Ala Val Arg Pro
195 200 205

Lys Ile Lys Cys His Leu Lys Val Pro Leu Ser Thr Ser Ser Ser Asp
210 215 220

Glu Arg Phe Gln Phe His Pro Thr Lys Cys His Val Asp Leu
225 230 235

<210> 81
<211> 243
<212> PRT
<213> Arabidopsis thaliana

<400> 81

Met Gln Asp Pro Ser Arg Pro Ala Thr Gly Tyr Pro Tyr Pro Tyr Pro
1 5 10 15

Tyr Pro Asn Pro Gln Gln Gln Gln Pro Pro Thr Asn Gly Tyr Pro Asn
20 25 30

Pro Ala Ala Gly Thr Ala Tyr Pro Tyr Gln Asn His Asn Pro Tyr Tyr
35 40 45

Ala Pro Gln Pro Asn Pro Arg Ala Val Ile Ile Arg Arg Leu Phe Ile
50 55 60

P59845PC00 sequence listing

Val Phe Thr Thr Phe Leu Leu Leu Leu Gly Leu Ile Leu Phe Ile Phe
65 70 75 80

Phe Leu Ile Val Arg Pro Gln Leu Pro Asp Val Asn Leu Asn Ser Leu
85 90 95

Ser Val Ser Asn Phe Asn Val Ser Asn Asn Gln Val Ser Gly Lys Trp
100 105 110

Asp Leu Gln Leu Gln Phe Arg Asn Pro Asn Ser Lys Met Ser Leu His
115 120 125

Tyr Glu Thr Ala Leu Cys Ala Met Tyr Tyr Asn Arg Val Ser Leu Ser
130 135 140

Glu Thr Arg Leu Gln Pro Phe Asp Gln Gly Lys Lys Asp Gln Thr Val
145 150 155 160

Val Asn Ala Thr Leu Ser Val Ser Gly Thr Tyr Val Asp Gly Arg Leu
165 170 175

Val Asp Ser Ile Gly Lys Glu Arg Ser Val Lys Gly Asn Val Glu Phe
180 185 190

Asp Leu Arg Met Ile Ser Tyr Val Thr Phe Arg Tyr Gly Ala Phe Arg
195 200 205

Arg Arg Arg Tyr Val Thr Val Tyr Cys Asp Asp Val Ala Val Gly Val
210 215 220

Pro Val Ser Ser Gly Glu Gly Lys Met Val Gly Ser Ser Lys Arg Cys
225 230 235 240

Lys Thr Tyr

<210> 82

<211> 227

<212> PRT

<213> Arabidopsis thaliana

<400> 82

Met Gly Glu Gly Glu Ala Lys Ala Glu His Ala Ala Lys Ala Asp His
1 5 10 15

Lys Asn Ala Pro Ser Ala Ser Ser Thr Pro Glu Ser Tyr Ser Lys Glu
20 25 30

P59845PC00 sequence listing

Gly Gly Gly Gly Gly Gly Asp Ala Arg Arg Ala Ile Cys Gly Ala Ile
35 40 45

Phe Thr Ile Leu Val Ile Leu Gly Ile Ile Ala Leu Ile Leu Trp Leu
50 55 60

Val Tyr Arg Pro His Lys Pro Arg Leu Thr Val Val Gly Ala Ala Ile
65 70 75 80

Tyr Asp Leu Asn Phe Thr Ala Pro Pro Leu Ile Ser Thr Ser Val Gln
85 90 95

Phe Ser Val Leu Ala Arg Asn Pro Asn Arg Arg Val Ser Ile His Tyr
100 105 110

Asp Lys Leu Ser Met Tyr Val Thr Tyr Lys Asp Gln Ile Ile Thr Pro
115 120 125

Pro Leu Pro Leu Pro Pro Leu Arg Leu Gly His Lys Ser Thr Val Val
130 135 140

Ile Ala Pro Val Met Gly Gly Asn Gly Ile Pro Val Ser Pro Glu Val
145 150 155 160

Ala Asn Gly Leu Lys Asn Asp Glu Ala Tyr Gly Val Val Leu Met Arg
165 170 175

Val Val Ile Phe Gly Arg Leu Arg Trp Lys Ala Gly Ala Ile Lys Thr
180 185 190

Gly Arg Tyr Gly Phe Tyr Ala Arg Cys Asp Val Trp Leu Arg Phe Asn
195 200 205

Pro Ser Ser Asn Gly Gln Val Pro Leu Leu Ala Pro Ser Thr Cys Lys
210 215 220

Val Asp Val
225

<210> 83
<211> 210
<212> PRT
<213> Arabidopsis thaliana

<400> 83

Met Thr Gly Arg Tyr Cys Asp Gln His Asn Gly Tyr Glu Glu Arg Arg
1 5 10 15

P59845PC00 sequence listing

Met Arg Met Met Met Arg Arg Ile Ala Trp Ala Cys Leu Gly Leu Ile
20 25 30

Val Ala Val Ala Phe Val Val Phe Leu Val Trp Ala Ile Leu His Pro
35 40 45

His Gly Pro Arg Phe Val Leu Gln Asp Val Thr Ile Asn Asp Phe Asn
50 55 60

Val Ser Gln Pro Asn Phe Leu Ser Ser Asn Leu Gln Val Thr Val Ser
65 70 75 80

Ser Arg Asn Pro Asn Asp Lys Ile Gly Ile Phe Tyr Asp Arg Leu Asp
85 90 95

Ile Tyr Val Thr Tyr Arg Asn Gln Glu Val Thr Leu Ala Arg Leu Leu
100 105 110

Pro Ser Thr Tyr Gln Gly His Leu Glu Val Thr Val Trp Ser Pro Phe
115 120 125

Leu Ile Gly Ser Ala Val Pro Val Ala Pro Tyr Leu Ser Ser Ala Leu
130 135 140

Asn Glu Asp Leu Phe Ala Gly Leu Val Leu Leu Asn Ile Lys Ile Asp
145 150 155 160

Gly Trp Val Arg Trp Lys Val Gly Ser Trp Val Ser Gly Ser Tyr Arg
165 170 175

Leu His Val Asn Cys Pro Ala Phe Ile Thr Val Thr Gly Lys Leu Thr
180 185 190

Gly Thr Gly Pro Ala Ile Lys Tyr Gln Leu Val Gln Arg Cys Ala Val
195 200 205

Asp Val
210

<210> 84
<211> 224
<212> PRT
<213> Arabidopsis thaliana

<400> 84

Met His Asn Lys Val Asp Ser Leu Pro Val Arg Ser Asn Pro Ser Thr
1 5 10 15

P59845PC00 sequence listing

Arg Pro Ile Ser Arg His His Ser Ala Ser Asn Ile Val His Arg Val
20 25 30

Lys Glu Ser Leu Thr Thr Arg Val Ser Lys Leu Ile Cys Ala Ile Phe
35 40 45

Leu Ser Leu Leu Leu Cys Leu Gly Ile Ile Thr Phe Ile Leu Trp Ile
50 55 60

Ser Leu Gln Pro His Arg Pro Arg Val His Ile Arg Gly Phe Ser Ile
65 70 75 80

Ser Gly Leu Ser Arg Pro Asp Gly Phe Glu Thr Ser His Ile Ser Phe
85 90 95

Lys Ile Thr Ala His Asn Pro Asn Gln Asn Val Gly Ile Tyr Tyr Asp
100 105 110

Ser Met Glu Gly Ser Val Tyr Tyr Lys Glu Lys Arg Ile Gly Ser Thr
115 120 125

Lys Leu Thr Asn Pro Phe Tyr Gln Asp Pro Lys Asn Thr Ser Ser Ile
130 135 140

Asp Gly Ala Leu Ser Arg Pro Ala Met Ala Val Asn Lys Asp Arg Trp
145 150 155 160

Met Glu Met Glu Arg Asp Arg Asn Gln Gly Lys Ile Met Phe Arg Leu
165 170 175

Lys Val Arg Ser Met Ile Arg Phe Lys Val Tyr Thr Trp His Ser Lys
180 185 190

Ser His Lys Met Tyr Ala Ser Cys Tyr Ile Glu Ile Gly Trp Asp Gly
195 200 205

Met Leu Leu Ser Ala Thr Lys Asp Lys Arg Cys Pro Val Tyr Phe Thr
210 215 220

<210> 85
<211> 208
<212> PRT
<213> Arabidopsis thaliana

<400> 85

Met Ser Lys Asp Cys Gly Asn His Gly Gly Gly Lys Glu Val Val Val
1 5 10 15

P59845PC00 sequence listing

Arg Lys Leu Cys Ala Ala Ile Ile Ala Phe Ile Val Ile Val Leu Ile
20 25 30

Thr Ile Phe Leu Val Trp Val Ile Leu Arg Pro Thr Lys Pro Arg Phe
35 40 45

Val Leu Gln Asp Ala Thr Val Tyr Ala Phe Asn Leu Ser Gln Pro Asn
50 55 60

Leu Leu Thr Ser Asn Phe Gln Val Thr Ile Ala Ser Arg Asn Pro Asn
65 70 75 80

Ser Lys Ile Gly Ile Tyr Tyr Asp Arg Leu His Val Tyr Ala Thr Tyr
85 90 95

Met Asn Gln Gln Ile Thr Leu Arg Thr Ala Ile Pro Pro Thr Tyr Gln
100 105 110

Gly His Lys Glu Val Asn Val Trp Ser Pro Phe Val Tyr Gly Thr Ala
115 120 125

Val Pro Ile Ala Pro Tyr Asn Ser Val Ala Leu Gly Glu Glu Lys Asp
130 135 140

Arg Gly Phe Val Gly Leu Met Ile Arg Ala Asp Gly Thr Val Arg Trp
145 150 155 160

Lys Val Arg Thr Leu Ile Thr Gly Lys Tyr His Ile His Val Arg Cys
165 170 175

Gln Ala Phe Ile Asn Leu Gly Asn Lys Ala Ala Gly Val Leu Val Gly
180 185 190

Asp Asn Ala Val Lys Tyr Thr Leu Ala Asn Lys Cys Ser Val Asn Val
195 200 205

<210> 86

<211> 213

<212> PRT

<213> Arabidopsis thaliana

<400> 86

Met Ser Gln Ile Ser Ile Thr Ser Pro Lys His Cys Ala Lys Lys Gly
1 5 10 15

Gly Ile Asn Ile Asn Asn Arg His Lys Lys Leu Phe Phe Thr Phe Ser
20 25 30

P59845PC00 sequence listing

Thr Phe Phe Ser Gly Leu Leu Leu Ile Ile Phe Leu Val Trp Leu Ile
35 40 45

Leu His Pro Glu Arg Pro Glu Phe Ser Leu Thr Glu Ala Asp Ile Tyr
50 55 60

Ser Leu Asn Leu Thr Thr Ser Ser Thr His Leu Leu Asn Ser Ser Val
65 70 75 80

Gln Leu Thr Leu Phe Ser Lys Asn Pro Asn Lys Lys Val Gly Ile Tyr
85 90 95

Tyr Asp Lys Leu Leu Val Tyr Ala Ala Tyr Arg Gly Gln Gln Ile Thr
100 105 110

Ser Glu Ala Ser Leu Pro Pro Phe Tyr Gln Ser His Glu Glu Ile Asn
115 120 125

Leu Leu Thr Ala Phe Leu Gln Gly Thr Glu Leu Pro Val Ala Gln Ser
130 135 140

Phe Gly Tyr Gln Ile Ser Arg Glu Arg Ser Thr Gly Lys Ile Ile Ile
145 150 155 160

Gly Met Lys Met Asp Gly Lys Leu Arg Trp Lys Ile Gly Thr Trp Val
165 170 175

Ser Gly Ala Tyr Arg Phe Asn Val Asn Cys Leu Ala Ile Val Ala Phe
180 185 190

Gly Met Asn Met Thr Thr Pro Pro Leu Ala Ser Leu Gln Gly Thr Arg
195 200 205

Cys Ser Thr Thr Ile
210

<210> 87
<211> 265
<212> PRT
<213> Arabidopsis thaliana

<400> 87

Met Ala Gly Glu Thr Leu Leu Lys Pro Val Leu Gln Lys Pro Pro Gly
1 5 10 15

Tyr Arg Glu Leu His Ser Gln Pro Gln Thr Pro Leu Gly Ser Ser Ser
20 25 30

P59845PC00 sequence listing

Ser Ser Ser Ser Met Leu Arg Arg Pro Pro Lys His Ala Ile Pro Ala
35 40 45

Ala Phe Tyr Pro Thr Lys Lys Arg Gln Trp Ser Arg Cys Arg Val Phe
50 55 60

Cys Cys Cys Val Cys Ile Thr Val Ala Ile Val Ile Leu Leu Leu Ile
65 70 75 80

Leu Thr Val Ser Val Phe Phe Leu Tyr Tyr Ser Pro Arg Leu Pro Val
85 90 95

Val Arg Leu Ser Ser Phe Arg Val Ser Asn Phe Asn Phe Ser Gly Gly
100 105 110

Lys Ala Gly Asp Gly Leu Ser Gln Leu Thr Ala Glu Ala Thr Ala Arg
115 120 125

Leu Asp Phe Arg Asn Pro Asn Gly Lys Leu Arg Tyr Tyr Tyr Gly Asn
130 135 140

Val Asp Val Ala Val Ser Val Gly Glu Asp Asp Phe Glu Thr Ser Leu
145 150 155 160

Gly Ser Thr Lys Val Lys Gly Phe Val Glu Lys Pro Gly Asn Arg Thr
165 170 175

Val Val Ile Val Pro Ile Lys Val Lys Lys Gln Gln Val Asp Asp Pro
180 185 190

Thr Val Lys Arg Leu Arg Ala Asp Met Lys Ser Lys Lys Leu Val Val
195 200 205

Lys Val Met Ala Lys Thr Lys Val Gly Leu Gly Val Gly Arg Arg Lys
210 215 220

Ile Val Thr Val Gly Val Thr Ile Ser Cys Gly Gly Val Arg Leu Gln
225 230 235 240

Thr Leu Asp Ser Lys Met Ser Lys Cys Thr Ile Lys Met Leu Lys Trp
245 250 255

Tyr Val Pro Ile Gln Val Lys Cys Ile
260 265

<210> 88
<211> 210
<212> PRT

P59845PC00 sequence listing

<213> Arabidopsis thaliana

<400> 88

Met Thr Thr Lys Asp Cys Gly Asn His Gly Gly Gly Gly Gly Gly Gly
1 5 10 15

Thr Ala Ser Arg Ile Cys Gly Val Ile Ile Gly Phe Ile Ile Ile Val
20 25 30

Leu Ile Thr Ile Phe Leu Val Trp Ile Ile Leu Gln Pro Thr Lys Pro
35 40 45

Arg Phe Ile Leu Gln Asp Ala Thr Val Tyr Ala Phe Asn Leu Ser Gln
50 55 60

Pro Asn Leu Leu Thr Ser Asn Phe Gln Ile Thr Ile Ala Ser Arg Asn
65 70 75 80

Arg Asn Ser Arg Ile Gly Ile Tyr Tyr Asp Arg Leu His Val Tyr Ala
85 90 95

Thr Tyr Arg Asn Gln Gln Ile Thr Leu Arg Thr Ala Ile Pro Pro Thr
100 105 110

Tyr Gln Gly His Lys Glu Asp Asn Val Trp Ser Pro Phe Val Tyr Gly
115 120 125

Asn Ser Val Pro Ile Ala Pro Phe Asn Ala Val Ala Leu Gly Asp Glu
130 135 140

Gln Asn Arg Gly Phe Val Thr Leu Ile Ile Arg Ala Asp Gly Arg Val
145 150 155 160

Arg Trp Lys Val Gly Thr Leu Ile Thr Gly Lys Tyr His Leu His Val
165 170 175

Arg Cys Gln Ala Phe Ile Asn Leu Ala Asp Lys Ala Ala Gly Val His
180 185 190

Val Gly Glu Asn Ala Val Lys Tyr Met Leu Ile Asn Lys Cys Ser Val
195 200 205

Asn Val
210

<210> 89

<211> 300

<212> PRT

P59845PC00 sequence listing

<213> Arabidopsis thaliana

<400> 89

```

Met Pro Ser Pro Pro Glu Glu Glu Thr Gln Pro Lys Pro Asp Thr Gly
1      5      10
Pro Gly Gln Asn Ser Glu Arg Asp Ile Asn Gln Pro Pro Pro Pro Pro
20     25     30
Pro Gln Ser Gln Pro Pro Pro Pro Gln Thr Gln Gln Gln Thr Tyr Pro
35     40     45
Pro Val Met Gly Tyr Pro Gly Tyr His Gln Pro Pro Pro Pro Tyr Pro
50     55     60
Asn Tyr Pro Asn Ala Pro Tyr Gln Gln Tyr Pro Tyr Ala Gln Ala Pro
65     70     75     80
Pro Ala Ser Tyr Tyr Gly Ser Ser Tyr Pro Ala Gln Gln Asn Pro Val
85     90     95
Tyr Gln Arg Pro Ala Ser Ser Gly Phe Val Arg Gly Ile Phe Thr Gly
100    105    110
Leu Ile Val Leu Val Val Leu Leu Cys Ile Ser Thr Thr Ile Thr Trp
115    120
Leu Val Leu Arg Pro Gln Ile Pro Leu Phe Ser Val Asn Asn Phe Ser
130    135    140
Val Ser Asn Phe Asn Val Thr Gly Pro Val Phe Ser Ala Gln Trp Thr
145    150    155    160
Ala Asn Leu Thr Ile Glu Asn Gln Asn Thr Lys Leu Lys Gly Tyr Phe
165    170    175
Asp Arg Ile Gln Gly Leu Val Tyr His Gln Asn Ala Val Gly Glu Asp
180    185    190
Glu Phe Leu Ala Thr Ala Phe Phe Gln Pro Val Phe Val Glu Thr Lys
195    200    205
Lys Ser Val Val Ile Gly Glu Thr Leu Thr Ala Gly Asp Lys Glu Gln
210    215    220
Pro Lys Val Pro Ser Trp Val Val Asp Glu Met Lys Lys Glu Arg Glu
225    230    235    240

```

P59845PC00 sequence listing

Thr Gly Thr Val Thr Phe Ser Leu Arg Met Ala Val Trp Val Thr Phe
245 250 255

Lys Thr Asp Gly Trp Ala Ala Arg Glu Ser Gly Leu Lys Val Phe Cys
260 265 270

Gly Lys Leu Lys Val Gly Phe Glu Gly Ile Ser Gly Asn Gly Ala Val
275 280 285

Leu Leu Pro Lys Pro Leu Pro Cys Val Val Tyr Val
290 295 300

<210> 90

<211> 211

<212> PRT

<213> Arabidopsis thaliana

<400> 90

Met Thr Thr Lys Glu Cys Gly Asn His Gly Gly Gly Gly Gly Gly Gly
1 5 10 15

Gly Thr Ala Cys Arg Ile Cys Gly Ala Ile Ile Gly Phe Ile Ile Ile
20 25 30

Val Leu Met Thr Ile Phe Leu Val Trp Ile Ile Leu Gln Pro Lys Asn
35 40 45

Pro Glu Phe Ile Leu Gln Asp Thr Thr Val Tyr Ala Phe Asn Leu Ser
50 55 60

Gln Pro Asn Leu Leu Thr Ser Lys Phe Gln Ile Thr Ile Ala Ser Arg
65 70 75 80

Asn Arg Asn Ser Asn Ile Gly Ile Tyr Tyr Asp His Leu His Ala Tyr
85 90 95

Ala Ser Tyr Arg Asn Gln Gln Ile Thr Leu Ala Ser Asp Leu Pro Pro
100 105 110

Thr Tyr Gln Arg His Lys Glu Asp Ser Val Trp Ser Pro Leu Leu Tyr
115 120 125

Gly Asn Gln Val Pro Ile Ala Pro Phe Asn Ala Val Ala Leu Gly Asp
130 135 140

Glu Gln Asn Ser Gly Val Phe Thr Leu Thr Ile Cys Val Asp Gly Gln
145 150 155 160

P59845PC00 sequence listing

Val Arg Trp Lys Val Gly Thr Leu Thr Ile Gly Asn Tyr His Leu His
165 170 175

Val Arg Cys Gln Ala Phe Ile Asn Gln Ala Asp Lys Ala Ala Gly Val
180 185 190

His Val Gly Glu Asn Thr Val Lys Tyr Thr Leu Ile Asn Lys Cys Ser
195 200 205

Val Asn Phe
210

<210> 91
<211> 211
<212> PRT
<213> Arabidopsis thaliana

<400> 91

Met Thr Thr Lys Glu Cys Gly Asn His Gly Gly Gly Gly Gly Gly Gly
1 5 10 15

Gly Thr Ala Cys Arg Ile Cys Gly Ala Ile Ile Gly Phe Ile Ile Ile
20 25 30

Val Leu Met Thr Ile Phe Leu Val Ser Ile Ile Leu Gln Pro Lys Lys
35 40 45

Pro Glu Phe Ile Leu Gln Asp Thr Thr Val Tyr Ala Phe Asn Leu Ser
50 55 60

Gln Pro Asn Leu Leu Thr Ser Lys Phe Gln Ile Thr Ile Ala Ser Arg
65 70 75 80

Asn Arg Asn Ser Asn Ile Gly Ile Tyr Tyr Asp His Leu His Ala Tyr
85 90 95

Ala Ser Tyr Arg Asn Gln Gln Ile Thr Leu Ala Ser Asp Leu Pro Pro
100 105 110

Thr Tyr Gln Arg His Lys Glu Asn Ser Val Trp Ser Pro Leu Leu Tyr
115 120 125

Gly Asn Gln Val Pro Ile Ala Pro Phe Asn Ala Val Ala Leu Gly Asp
130 135 140

Glu Gln Asn Ser Gly Val Phe Thr Leu Thr Ile Cys Val Asp Gly Arg
145 150 155 160

P59845PC00 sequence listing

Val Arg Trp Lys Val Gly Thr Leu Thr Ile Gly Asn Tyr His Leu His
165 170 175

Val Arg Cys Gln Ala Phe Ile Asn Gln Ala Asp Lys Ala Ala Gly Val
180 185 190

His Val Gly Glu Asn Thr Val Lys Tyr Thr Leu Ile Asn Lys Cys Ser
195 200 205

Val Asn Phe
210

<210> 92
<211> 356
<212> PRT
<213> Arabidopsis thaliana

<400> 92

Met Ser His His His His His Glu Thr Asn Pro His Phe Ala Arg Ile
1 5 10 15

Pro Ser Gln Asn Pro His Leu Lys Ser Gly Gly Ala Ser Thr Ser Gln
20 25 30

Thr Ser Ser Asn Gln Pro His Ile Pro Pro Ile Pro His Pro Lys Lys
35 40 45

Ser His His Lys Thr Thr Gln Pro His Pro Val Ala Pro Pro Gly Ile
50 55 60

Leu Ile Lys Thr Arg Gly Arg His Arg Glu Asn Pro Ile Gln Glu Pro
65 70 75 80

Lys His Ser Val Ile Pro Val Pro Leu Ser Pro Glu Glu Arg Leu Pro
85 90 95

Pro Arg Lys Thr Gln Asn Ser Ser Lys Arg Pro Leu Leu Leu Ser Pro
100 105 110

Glu Asp Asn Gln Gln Gln Arg Pro Pro Pro Gln Ala Pro Gln Arg
115 120 125

Asn Gly Gly Gly Tyr Gly Ser Thr Leu Pro Pro Ile Pro Lys Pro Ser
130 135 140

Pro Trp Arg Thr Ala Pro Thr Pro Ser Pro His His Arg Arg Gly Pro
145 150 155 160

P59845PC00 sequence listing

Arg Leu Pro Pro Pro Ser Arg Glu Thr Asn Ala Met Thr Trp Ser Ala
165 170 175

Ala Phe Cys Cys Ala Ile Phe Trp Val Ile Leu Ile Leu Gly Gly Leu
180 185 190

Ile Ile Leu Ile Val Tyr Leu Val Tyr Arg Pro Arg Ser Pro Tyr Val
195 200 205

Asp Ile Ser Ala Ala Asn Leu Asn Ala Ala Tyr Leu Asp Met Gly Phe
210 215 220

Leu Leu Asn Gly Asp Leu Thr Ile Leu Ala Asn Val Thr Asn Pro Ser
225 230 235 240

Lys Lys Ser Ser Val Glu Phe Ser Tyr Val Thr Phe Glu Leu Tyr Tyr
245 250 255

Tyr Asn Thr Leu Ile Ala Thr Gln Tyr Ile Glu Pro Phe Lys Val Pro
260 265 270

Lys Lys Thr Ser Met Phe Ala Asn Val His Leu Val Ser Ser Gln Val
275 280 285

Gln Leu Gln Ala Thr Gln Ser Arg Glu Leu Gln Arg Gln Ile Glu Thr
290 295 300

Gly Pro Val Leu Leu Asn Leu Arg Gly Met Phe His Ala Arg Ser His
305 310 315 320

Ile Gly Pro Leu Phe Arg Tyr Ser Tyr Lys Leu His Thr His Cys Ser
325 330 335

Val Ser Leu Asn Gly Pro Pro Leu Gly Ala Met Arg Ala Arg Arg Cys
340 345 350

Asn Thr Lys Arg
355

<210> 93
<211> 209
<212> PRT
<213> Arabidopsis thaliana

<400> 93

Met Lys Asp Cys Glu Asn His Gly His Ser Arg Arg Lys Leu Ile Arg
1 5 10 15

P59845PC00 sequence listing

Arg Ile Phe Trp Ser Ile Ile Phe Val Leu Phe Ile Ile Phe Leu Thr
20 25 30

Ile Leu Leu Ile Trp Ala Ile Leu Gln Pro Ser Lys Pro Arg Phe Ile
35 40 45

Leu Gln Asp Ala Thr Val Tyr Ala Phe Asn Val Ser Gly Asn Pro Pro
50 55 60

Asn Leu Leu Thr Ser Asn Phe Gln Ile Thr Leu Ser Ser Arg Asn Pro
65 70 75 80

Asn Asn Lys Ile Gly Ile Tyr Tyr Asp Arg Leu Asp Val Tyr Ala Thr
85 90 95

Tyr Arg Ser Gln Gln Ile Thr Phe Pro Thr Ser Ile Pro Pro Thr Tyr
100 105 110

Gln Gly His Lys Asp Val Asp Ile Trp Ser Pro Phe Val Tyr Gly Thr
115 120 125

Ser Val Pro Ile Ala Pro Phe Asn Gly Val Ser Leu Asp Thr Asp Lys
130 135 140

Asp Asn Gly Val Val Leu Leu Ile Ile Arg Ala Asp Gly Arg Val Arg
145 150 155 160

Trp Lys Val Gly Thr Phe Ile Thr Gly Lys Tyr His Leu His Val Lys
165 170 175

Cys Pro Ala Tyr Ile Asn Phe Gly Asn Lys Ala Asn Gly Val Ile Val
180 185 190

Gly Asp Asn Ala Val Lys Tyr Thr Phe Thr Thr Ser Cys Ser Val Ser
195 200 205

Val

<210> 94
<211> 206
<212> PRT
<213> Arabidopsis thaliana

<400> 94

Met Thr Glu Lys Glu Cys Glu His His His Asp Glu Asp Glu Lys Met
1 5 10 15

P59845PC00 sequence listing

Arg Lys Arg Ile Gly Ala Leu Val Leu Gly Phe Leu Ala Ala Val Leu
20 25 30

Phe Val Val Phe Leu Val Trp Ala Ile Leu His Pro His Gly Pro Arg
35 40 45

Phe Val Leu Gln Asp Ala Thr Ile Tyr Ala Phe Asn Val Ser Gln Pro
50 55 60

Asn Tyr Leu Thr Ser Asn Leu Gln Val Thr Leu Ser Ser Arg Asn Pro
65 70 75 80

Asn Asp Lys Ile Gly Ile Phe Tyr Asp Arg Leu Asp Ile Tyr Ala Ser
85 90 95

Tyr Arg Asn Gln Gln Val Thr Leu Ala Thr Leu Leu Pro Ala Thr Tyr
100 105 110

Gln Gly His Leu Asp Val Thr Ile Trp Ser Pro Phe Leu Tyr Gly Thr
115 120 125

Thr Val Pro Val Ala Pro Tyr Phe Ser Pro Ala Leu Ser Gln Asp Leu
130 135 140

Thr Ala Gly Met Val Leu Leu Asn Ile Lys Ile Asp Gly Trp Val Arg
145 150 155 160

Trp Lys Val Gly Thr Trp Val Ser Gly Arg Tyr Arg Leu His Val Asn
165 170 175

Cys Pro Ala Tyr Ile Thr Leu Ala Gly His Phe Ser Gly Asp Gly Pro
180 185 190

Ala Val Lys Tyr Gln Leu Val Gln Arg Cys Ala Val Asp Val
195 200 205

<210> 95

<211> 221

<212> PRT

<213> Arabidopsis thaliana

<400> 95

Met Val Pro Pro Asn Pro Ala His Gln Pro Ala Arg Arg Thr Gln Pro
1 5 10 15

Gln Leu Gln Pro Gln Ser Gln Pro Arg Ala Gln Pro Leu Pro Gly Arg
20 25 30

P59845PC00 sequence listing

Arg Met Asn Pro Val Leu Cys Ile Ile Val Ala Leu Val Leu Leu Gly
35 40 45

Leu Leu Val Gly Leu Ala Ile Leu Ile Thr Tyr Leu Thr Leu Arg Pro
50 55 60

Lys Arg Leu Ile Tyr Thr Val Glu Ala Ala Ser Val Gln Glu Phe Ala
65 70 75 80

Ile Gly Asn Asn Asp Asp His Ile Asn Ala Lys Phe Ser Tyr Val Ile
85 90 95

Lys Ser Tyr Asn Pro Glu Lys His Val Ser Val Arg Tyr His Ser Met
100 105 110

Arg Ile Ser Thr Ala His His Asn Gln Ser Val Ala His Lys Asn Ile
115 120 125

Ser Pro Phe Lys Gln Arg Pro Lys Asn Glu Thr Arg Ile Glu Thr Gln
130 135 140

Leu Val Ser His Asn Val Ala Leu Ser Lys Phe Asn Ala Arg Asp Leu
145 150 155 160

Arg Ala Glu Lys Ser Lys Gly Thr Ile Glu Met Glu Val Tyr Ile Thr
165 170 175

Ala Arg Val Ser Tyr Lys Thr Trp Ile Phe Arg Ser Arg Arg Arg Thr
180 185 190

Leu Lys Ala Val Cys Thr Pro Val Met Ile Asn Val Thr Ser Ser Ser
195 200 205

Leu Asp Gly Phe Gln Arg Val Leu Cys Lys Thr Arg Leu
210 215 220

<210> 96
<211> 220
<212> PRT
<213> Arabidopsis thaliana

<400> 96

Met Pro Pro Pro Pro Ser Ser Ser Arg Ala Gly Leu Asn Gly Asp Pro
1 5 10 15

Ile Ala Ala Gln Asn Gln Gln Pro Tyr Tyr Arg Ser Tyr Ser Ser Ser
20 25 30

P59845PC00 sequence listing

Ser Ser Ala Ser Leu Lys Gly Cys Cys Cys Cys Leu Phe Leu Leu Phe
35 40 45

Ala Phe Leu Ala Leu Leu Val Leu Ala Val Val Leu Ile Val Ile Leu
50 55 60

Ala Val Lys Pro Lys Lys Pro Gln Phe Asp Leu Gln Gln Val Ala Val
65 70 75 80

Val Tyr Met Gly Ile Ser Asn Pro Ser Ala Val Leu Asp Pro Thr Thr
85 90 95

Ala Ser Leu Ser Leu Thr Ile Arg Met Leu Phe Thr Ala Val Asn Pro
100 105 110

Asn Lys Val Gly Ile Arg Tyr Gly Glu Ser Ser Phe Thr Val Met Tyr
115 120 125

Lys Gly Met Pro Leu Gly Arg Ala Thr Val Pro Gly Phe Tyr Gln Asp
130 135 140

Ala His Ser Thr Lys Asn Val Glu Ala Thr Ile Ser Val Asp Arg Val
145 150 155 160

Asn Leu Met Gln Ala His Ala Ala Asp Leu Val Arg Asp Ala Ser Leu
165 170 175

Asn Asp Arg Val Glu Leu Thr Val Arg Gly Asp Val Gly Ala Lys Ile
180 185 190

Arg Val Met Asn Phe Asp Ser Pro Gly Val Gln Val Leu Leu Pro Ser
195 200 205

Phe Leu Pro Ala Phe Cys Ser Leu Ser Asp Leu Ala
210 215 220

<210> 97
<211> 207
<212> PRT
<213> Arabidopsis thaliana

<400> 97

Met Thr Ser Lys Asp Cys Gly Ser His Asp Ser His Ser Ser Cys Asn
1 5 10 15

Arg Lys Ile Val Ile Trp Thr Ile Ser Ile Ile Leu Leu Leu Ile Leu
20 25 30

P59845PC00 sequence listing

Val Val Ile Leu Leu Val Trp Ala Ile Leu Gln Pro Ser Lys Pro Arg
35 40 45

Phe Val Leu Gln Asp Ala Thr Val Phe Asn Phe Asn Val Ser Gly Asn
50 55 60

Pro Pro Asn Leu Leu Thr Ser Asn Phe Gln Phe Thr Leu Ser Ser Arg
65 70 75 80

Asn Pro Asn Asp Lys Ile Gly Ile Tyr Tyr Asp Arg Leu Asp Val Tyr
85 90 95

Ala Ser Tyr Arg Ser Gln Gln Ile Thr Leu Pro Ser Pro Met Leu Thr
100 105 110

Thr Tyr Gln Gly His Lys Glu Val Asn Val Trp Ser Pro Phe Val Gly
115 120 125

Gly Tyr Ser Val Pro Val Ala Pro Tyr Asn Ala Phe Tyr Leu Asp Gln
130 135 140

Asp His Ser Ser Gly Ala Ile Met Leu Met Leu His Leu Asp Gly Arg
145 150 155 160

Val Arg Trp Lys Val Gly Ser Phe Ile Thr Gly Lys Tyr His Leu His
165 170 175

Val Arg Cys His Ala Leu Ile Asn Phe Gly Ser Ser Ala Ala Gly Val
180 185 190

Ile Val Gly Lys Tyr Met Leu Thr Glu Thr Cys Ser Val Ser Val
195 200 205

<210> 98

<211> 283

<212> PRT

<213> Arabidopsis thaliana

<400> 98

Met Ser Lys Phe Ser Pro Pro Pro Gln Ser Gln Pro Gln Pro Pro Glu
1 5 10 15

Thr Pro Pro Trp Glu Thr Pro Ser Ser Lys Trp Tyr Ser Pro Ile Tyr
20 25 30

Thr Pro Trp Arg Thr Thr Pro Arg Ser Thr Gln Ser Thr Pro Thr Thr
35 40 45

P59845PC00 sequence listing

Thr Pro Ile Ala Leu Thr Glu Val Ile Val Ser Lys Ser Pro Leu Ser
50 55 60

Asn Gln Lys Ser Pro Ala Thr Pro Lys Leu Asp Ser Met Glu Ala His
65 70 75 80

Pro Leu His Glu Thr Met Val Leu Leu Gln Leu Arg Thr Ser Arg Thr
85 90 95

Asn Pro Trp Ile Trp Cys Gly Ala Ala Leu Cys Phe Ile Phe Ser Ile
100 105 110

Leu Leu Ile Val Phe Gly Ile Ala Thr Leu Ile Leu Tyr Leu Ala Val
115 120 125

Lys Pro Arg Thr Pro Val Phe Asp Ile Ser Asn Ala Lys Leu Asn Thr
130 135 140

Ile Leu Phe Glu Ser Pro Val Tyr Phe Asn Gly Asp Met Leu Leu Gln
145 150 155 160

Leu Asn Phe Thr Asn Pro Asn Lys Lys Leu Asn Val Arg Phe Glu Asn
165 170 175

Leu Met Val Glu Leu Trp Phe Ala Asp Thr Lys Ile Ala Thr Gln Gly
180 185 190

Val Leu Pro Phe Ser Gln Arg Asn Gly Lys Thr Arg Leu Glu Pro Ile
195 200 205

Arg Leu Ile Ser Asn Leu Val Phe Leu Pro Val Asn His Ile Leu Glu
210 215 220

Leu Arg Arg Gln Val Thr Ser Asn Arg Ile Ala Tyr Glu Ile Arg Ser
225 230 235 240

Asn Phe Arg Val Lys Ala Ile Phe Gly Met Ile His Tyr Ser Tyr Met
245 250 255

Leu His Gly Ile Cys Gln Leu Gln Leu Ser Ser Pro Pro Ala Gly Gly
260 265 270

Leu Val Tyr Arg Asn Cys Thr Thr Lys Arg Trp
275 280

<210> 99
<211> 219

P59845PC00 sequence listing

<212> PRT

<213> Arabidopsis thaliana

<400> 99

Met Asn Asn Gln Asn Glu Asp Thr Glu Gly Gly Arg Asn Cys Cys Thr
1 5 10 15

Cys Cys Leu Ser Phe Ile Phe Thr Ala Gly Leu Thr Ser Leu Phe Leu
20 25 30

Trp Leu Ser Leu Arg Ala Asp Lys Pro Lys Cys Ser Ile Gln Asn Phe
35 40 45

Phe Ile Pro Ala Leu Gly Lys Asp Pro Asn Ser Arg Asp Asn Thr Thr
50 55 60

Leu Asn Phe Met Val Arg Cys Asp Asn Pro Asn Lys Asp Lys Gly Ile
65 70 75 80

Tyr Tyr Asp Asp Val His Leu Asn Phe Ser Thr Ile Asn Thr Thr Lys
85 90 95

Ile Asn Ser Ser Ala Leu Val Leu Val Gly Asn Tyr Thr Val Pro Lys
100 105 110

Phe Tyr Gln Gly His Lys Lys Lys Ala Lys Lys Trp Gly Gln Val Lys
115 120 125

Pro Leu Asn Asn Gln Thr Val Leu Arg Ala Val Leu Pro Asn Gly Ser
130 135 140

Ala Val Phe Arg Leu Asp Leu Lys Thr Gln Val Arg Phe Lys Ile Val
145 150 155 160

Phe Trp Lys Thr Lys Arg Tyr Gly Val Glu Val Gly Ala Asp Val Glu
165 170 175

Val Asn Gly Asp Gly Val Lys Ala Gln Lys Lys Gly Ile Lys Met Lys
180 185 190

Lys Ser Asp Ser Ser Phe Pro Leu Arg Ser Ser Phe Pro Ile Ser Val
195 200 205

Leu Met Asn Leu Leu Val Phe Phe Ala Ile Arg
210 215

<210> 100

<211> 235

P59845PC00 sequence listing

<212> PRT

<213> Arabidopsis thaliana

<400> 100

Met Ser Asp Phe Ser Ile Lys Pro Asp Asp Lys Lys Glu Glu Glu Lys
1 5 10 15

Pro Ala Thr Ala Met Leu Pro Pro Pro Lys Pro Asn Ala Ser Ser Met
20 25 30

Glu Thr Gln Ser Ala Asn Thr Gly Thr Ala Lys Lys Leu Arg Arg Lys
35 40 45

Arg Asn Cys Lys Ile Cys Ile Cys Phe Thr Ile Leu Leu Ile Leu Leu
50 55 60

Ile Ala Ile Val Ile Val Ile Leu Ala Phe Thr Leu Phe Lys Pro Lys
65 70 75 80

Arg Pro Thr Thr Thr Ile Asp Ser Val Thr Val Asp Arg Leu Gln Ala
85 90 95

Ser Val Asn Pro Leu Leu Leu Lys Val Leu Leu Asn Leu Thr Leu Asn
100 105 110

Val Asp Leu Ser Leu Lys Asn Pro Asn Arg Ile Gly Phe Ser Tyr Asp
115 120 125

Ser Ser Ser Ala Leu Leu Asn Tyr Arg Gly Gln Val Ile Gly Glu Ala
130 135 140

Pro Leu Pro Ala Asn Arg Ile Ala Ala Arg Lys Thr Val Pro Leu Asn
145 150 155 160

Ile Thr Leu Thr Leu Met Ala Asp Arg Leu Leu Ser Glu Thr Gln Leu
165 170 175

Leu Ser Asp Val Met Ala Gly Val Ile Pro Leu Asn Thr Phe Val Lys
180 185 190

Val Thr Gly Lys Val Thr Val Leu Lys Ile Phe Lys Ile Lys Val Gln
195 200 205

Ser Ser Ser Ser Cys Asp Leu Ser Ile Ser Val Ser Asp Arg Asn Val
210 215 220

Thr Ser Gln His Cys Lys Tyr Ser Thr Lys Leu
225 230 235

P59845PC00 sequence listing

<210> 101
 <211> 220
 <212> PRT
 <213> Arabidopsis thaliana

<400> 101

Met Thr Lys Ile Asp Pro Glu Glu Glu Leu Gly Arg Lys Cys Cys Thr
 1 5 10 15

Cys Phe Phe Lys Phe Ile Phe Thr Thr Arg Leu Gly Ala Leu Ile Leu
 20 25 30

Trp Leu Ser Leu Arg Ala Lys Lys Pro Lys Cys Ser Ile Gln Asn Phe
 35 40 45

Tyr Ile Pro Ala Leu Ser Lys Asn Leu Ser Ser Arg Asp Asn Thr Thr
 50 55 60

Leu Asn Phe Met Val Arg Cys Asp Asn Pro Asn Lys Asp Lys Gly Ile
 65 70 75 80

Tyr Tyr Asp Asp Val His Leu Thr Phe Ser Thr Ile Asn Thr Thr Thr
 85 90 95

Thr Asn Ser Ser Asp Leu Val Leu Val Ala Asn Tyr Thr Val Pro Lys
 100 105 110

Phe Tyr Gln Gly His Lys Lys Lys Ala Lys Lys Trp Gly Gln Val Trp
 115 120 125

Pro Leu Asn Asn Gln Thr Val Leu Arg Ala Val Leu Pro Asn Gly Ser
 130 135 140

Ala Val Phe Arg Leu Asp Leu Lys Thr His Val Arg Phe Lys Ile Val
 145 150 155 160

Phe Trp Lys Thr Lys Trp Tyr Arg Arg Ile Lys Val Gly Ala Asp Val
 165 170 175

Glu Val Asn Gly Asp Gly Val Lys Ala Gln Lys Lys Gly Ser Lys Thr
 180 185 190

Lys Lys Ser Asp Ser Ser Leu Pro Leu Arg Ser Ser Phe Pro Ile Phe
 195 200 205

Val Leu Met Asn Leu Leu Val Phe Phe Ala Ile Arg
 210 215 220

P59845PC00 sequence listing

<210> 102
 <211> 429
 <212> PRT
 <213> Arabidopsis thaliana

<400> 102

Met Ser His Val Thr Ala Thr Ser Leu Ala Arg Phe Thr Lys Pro Val
 1 5 10 15

Pro Lys Pro Ala Ser Ser Pro Ile Val Asn Thr Lys Leu Thr Thr Ser
 20 25 30

Gly Gly Arg Thr Ala Ala Phe Met Asp Leu Ser Ser Phe Arg Leu Thr
 35 40 45

Val Trp Asp Pro Asp Thr Ala Asn Asp Ser Ser Gly Lys Phe Pro Trp
 50 55 60

Pro Arg Phe Leu Phe Phe Phe Leu Thr Leu Lys Thr Gly Gly Ser Gly
 65 70 75 80

Leu Asn Ile Lys Pro Thr Ile Ser Ala Ile Ala Gln Met Met Asn Pro
 85 90 95

Met Thr Ile Thr Glu Met Asn Asn Gln Met His Arg Leu Glu Gln Lys
 100 105 110

Leu Leu Leu Phe Leu Pro Gly Ser Leu Phe Leu Arg Leu Ser Thr Ile
 115 120 125

Leu His Tyr Pro Gly Glu Gly Ser Asn Arg Pro Asp Pro Leu Glu His
 130 135 140

Ala Leu Arg Arg Ser Arg Ser Leu Gly Leu Asp Gln Glu Glu Ala Ala
 145 150 155 160

Lys Lys Val Ile Arg Val Gly Arg Asp Ser Lys Asn Asp Tyr Val Asn
 165 170 175

Val Val Glu Asn Gln Ala Ala Ser Phe Leu Arg Arg Cys Gly Pro Ser
 180 185 190

Lys Arg Ile Gln Ser Val Asn Tyr Cys Lys Ser Thr Arg Gln Gly His
 195 200 205

Glu Ile Pro Asp Val Lys Pro Leu Phe Pro Thr Gly Gly Gly Thr Gln
 210 215 220

P59845PC00 sequence listing

Ala Pro Ser Arg Ser Arg Ala Arg Tyr Ala Val Pro Ala Ile Leu Leu
225 230 235 240

Gly Phe Ala Gly Phe Val Gly Phe Leu His Tyr Asn Asp Glu Arg Arg
245 250 255

Ala Val Pro Arg Gly Gln Ala Ser Ser Asn Ser Gly Cys Gly Cys Gly
260 265 270

Ser Asn Thr Thr Val Lys Gly Pro Ile Ile Gly Gly Pro Phe Thr Leu
275 280 285

Val Ser Thr Glu Asn Lys Ile Val Thr Glu Asn Asp Phe Cys Gly Lys
290 295 300

Trp Val Leu Leu Tyr Phe Gly Tyr Ser Phe Ser Pro Asp Val Gly Pro
305 310 315 320

Glu Gln Leu Lys Met Met Ser Lys Ala Val Asp Lys Leu Ala Ile Leu
325 330 335

Leu Asn Pro Leu Thr Phe Gly Cys Leu Tyr Leu Tyr Ala Glu Phe Asp
340 345 350

Ser Arg Ile Leu Gly Leu Thr Gly Thr Ala Ser Ala Met Arg Gln Met
355 360 365

Ala Gln Glu Tyr Arg Val Tyr Phe Lys Lys Val Gln Glu Asp Gly Glu
370 375 380

Asp Tyr Leu Val Asp Thr Ser His Asn Met Tyr Leu Ile Asn Pro Lys
385 390 395 400

Met Glu Ile Val Arg Cys Phe Gly Val Glu Tyr Asn Pro Asp Glu Leu
405 410 415

Ser Gln Glu Leu Leu Lys Glu Val Ala Ser Val Ser Gln
420 425

<210> 103

<211> 416

<212> PRT

<213> Arabidopsis thaliana

<400> 103

Met Val Arg Ser Asn Asp Val Lys Phe Gln Val Tyr Asp Ala Glu Leu
1 5 10 15

P59845PC00 sequence listing

Thr His Phe Asp Leu Glu Ser Asn Asn Asn Leu Gln Tyr Ser Leu Ser
20 25 30

Leu Asn Leu Ser Ile Arg Asn Ser Lys Ser Ser Ile Gly Ile His Tyr
35 40 45

Asp Arg Phe Glu Ala Thr Val Tyr Tyr Met Asn Gln Arg Leu Gly Ala
50 55 60

Val Pro Met Pro Leu Phe Tyr Leu Gly Ser Lys Asn Thr Met Leu Leu
65 70 75 80

Arg Ala Leu Phe Glu Gly Gln Thr Leu Val Leu Leu Lys Gly Asn Glu
85 90 95

Arg Lys Lys Phe Glu Asp Asp Gln Lys Thr Gly Val Tyr Arg Ile Asp
100 105 110

Val Lys Leu Ser Ile Asn Phe Arg Val Met Val Leu His Leu Val Thr
115 120 125

Trp Pro Met Lys Pro Val Val Arg Cys His Leu Lys Ile Pro Leu Ala
130 135 140

Leu Gly Ser Ser Asn Ser Thr Gly Gly His Lys Lys Met Leu Leu Ile
145 150 155 160

Gly Gln Leu Val Lys Asp Thr Ser Ala Asn Leu Arg Glu Ala Ser Glu
165 170 175

Thr Asp His Arg Arg Asp Val Ala Gln Ser Lys Lys Ile Ala Asp Ala
180 185 190

Lys Leu Ala Lys Asp Phe Glu Ala Ala Leu Lys Glu Phe Gln Lys Ala
195 200 205

Gln His Ile Thr Val Glu Arg Glu Thr Ser Tyr Ile Pro Phe Asp Pro
210 215 220

Lys Gly Ser Phe Ser Ser Ser Glu Val Asp Ile Gly Tyr Asp Arg Ser
225 230 235 240

Gln Glu Gln Arg Val Leu Met Glu Ser Arg Arg Gln Glu Ile Val Leu
245 250 255

Leu Asp Asn Glu Ile Ser Leu Asn Glu Ala Arg Ile Glu Ala Arg Glu

P59845PC00 sequence listing

260
 Gln Gly Ile Gln Glu Val Lys His Gln Ile Ser Glu Val Met Glu Met
 275 280 285

Phe Lys Asp Leu Ala Val Met Val Asp His Gln Gly Thr Ile Asp Asp
 290 295 300

Ile Asp Glu Lys Ile Asp Asn Leu Arg Ser Ala Ala Ala Gln Gly Lys
 305 310 315 320

Ser His Leu Val Lys Ala Ser Asn Thr Gln Gly Ser Asn Ser Ser Leu
 325 330 335

Leu Phe Ser Cys Ser Leu Leu Leu Phe Phe Phe Leu Ser Gly Asp Leu
 340 345 350

Cys Arg Cys Val Cys Val Gly Ser Glu Asn Pro Arg Leu Asn Pro Thr
 355 360 365

Arg Arg Lys Ala Trp Cys Glu Glu Glu Asp Glu Glu Gln Arg Lys Lys
 370 375 380

Gln Gln Lys Lys Lys Thr Met Ser Glu Lys Arg Arg Arg Glu Glu Lys
 385 390 395 400

Lys Val Asn Lys Pro Asn Gly Phe Val Phe Cys Val Leu Gly His Lys
 405 410 415

<210> 104
 <211> 317
 <212> PRT
 <213> Arabidopsis thaliana

<400> 104

Met Ser His His His Tyr Glu Thr Asn Pro His Phe Val Gln Phe Ser
 1 5 10 15

Leu Gln Asp Gln His Gln Gly Gly Pro Ser Ser Ser Trp Asn Ser Pro
 20 25 30

His His His Gln Ile Pro Gln Ala His Ser Val Ala Pro Pro Arg Val
 35 40 45

Lys Ile Lys Thr Arg Gly Arg His Gln Thr Glu Pro Pro Glu Thr Ile
 50 55 60

His Glu Ser Pro Ser Ser Arg Pro Leu Pro Leu Arg Pro Glu Glu Pro

P59845PC00 sequence listing

65		70		75		80
Leu	Pro	Pro	Arg	His	Asn	Pro
				85		90
					Arg	Pro
						Leu
						Gln
						Leu
						Ser
Pro	Glu	Glu	Gln	Arg	Pro	Pro
			100			His
						Arg
						Gly
						Tyr
						Gly
						Ser
						Glu
						Pro
						Thr
Pro	Trp	Arg	Arg	Ala	Pro	Thr
		115				Arg
						Pro
						Ala
						Tyr
						Gln
						Gln
						Gly
						Pro
						Lys
Arg	Thr	Lys	Pro	Met	Thr	Leu
	130					135
						Pro
						Ala
						Thr
						Ile
						Cys
						140
						Cys
						Ala
						Ile
						Leu
Leu	Ile	Val	Leu	Ile	Leu	Ser
145						150
						Gly
						Leu
						Ile
						Leu
						155
						Leu
						Leu
						Val
						Tyr
						Leu
						160
Ala	Asn	Arg	Pro	Arg	Ser	Pro
				165		Tyr
						Phe
						Asp
						170
						Ile
						Ser
						Ala
						Ala
						Thr
						Leu
						175
Asn	Thr	Ala	Asn	Leu	Asp	Met
			180			Gly
						Tyr
						Val
						Leu
						Asn
						Gly
						Asp
						190
						Leu
						Ala
Val	Val	Val	Asn	Phe	Thr	Asn
		195				200
						Ser
						Lys
						Lys
						Ser
						Ser
						Val
						Asp
						Phe
Ser	Tyr	Val	Met	Phe	Glu	Leu
	210					215
						Tyr
						Phe
						Tyr
						Asn
						Thr
						Leu
						Ile
						Ala
						Thr
Glu	His	Ile	Glu	Pro	Phe	Ile
225					230	Val
						Pro
						Lys
						Gly
						235
						Met
						Ser
						Met
						Phe
						Thr
						240
Ser	Phe	His	Leu	Val	Ser	Ser
			245			Gln
						Val
						Gln
						Ile
						Gln
						Met
						Ile
						Gln
						Ser
						255
Gln	Asp	Leu	Gln	Leu	Gln	Leu
		260				Gly
						Thr
						265
						Gly
						Pro
						Val
						Leu
						Leu
						Asn
						Leu
						270
Arg	Gly	Thr	Phe	His	Ala	Arg
		275				Ser
						Asn
						Leu
						Gly
						Ser
						Leu
						Met
						Arg
						Tyr
Ser	Tyr	Trp	Leu	His	Thr	Gln
	290					295
						Cys
						Ser
						Ile
						Ser
						Leu
						Asn
						Thr
						Pro
						Pro
Ala	Gly	Thr	Met	Arg	Ala	Arg
305					310	Arg
						Cys
						Asn
						Thr
						Lys
						Arg

P59845PC00 sequence listing

<210> 105
 <211> 198
 <212> PRT
 <213> Arabidopsis thaliana

<400> 105

Met Pro Arg Leu Thr Ser Arg His Gly Thr Ser Pro Phe Ile Trp Cys
 1 5 10 15

Ala Ala Ile Ile Cys Ala Ile Ile Ser Ile Val Val Ile Val Gly Gly
 20 25 30

Ile Ile Val Phe Val Gly Tyr Leu Val Ile His Pro Arg Val Pro Ile
 35 40 45

Ile Ser Val Ala Asp Ala His Leu Asp Phe Leu Lys Tyr Asp Ile Val
 50 55 60

Gly Val Leu Gln Thr Gln Leu Thr Ile Val Ile Arg Val Glu Asn Asp
 65 70 75 80

Asn Ala Lys Ala His Ala Leu Phe Asp Glu Thr Glu Phe Lys Leu Ser
 85 90 95

Tyr Glu Gly Lys Pro Ile Ala Ile Leu Lys Ala Pro Glu Phe Glu Val
 100 105 110

Val Lys Glu Lys Ser Met Phe Leu Pro Tyr Leu Val Gln Ser Tyr Pro
 115 120 125

Ile Pro Leu Asn Pro Thr Met Met Gln Ala Val Asp Tyr Ala Val Lys
 130 135 140

Lys Asp Val Ile Thr Phe Glu Leu Lys Gly Gly Ser Arg Thr Arg Trp
 145 150 155 160

Arg Val Gly Pro Leu Gly Ser Val Lys Phe Glu Cys Asn Leu Ser Cys
 165 170 175

Gln Leu Arg Phe Arg Pro Ser Asp His Ser Tyr Ile Pro Ser Pro Cys
 180 185 190

Thr Ser Ala His Lys His
 195

<210> 106
 <211> 222
 <212> PRT
 <213> Arabidopsis thaliana

P59845PC00 sequence listing

<400> 106

Met Asp Arg Asp Asp Ala Trp Glu Trp Phe Val Thr Ile Val Gly Ser
1 5 10 15

Leu Met Thr Leu Leu Tyr Val Ser Phe Leu Leu Ala Leu Cys Leu Trp
20 25 30

Leu Ser Thr Leu Val His His Ile Pro Arg Cys Ser Ile His Tyr Phe
35 40 45

Tyr Ile Pro Ala Leu Asn Lys Ser Leu Ile Ser Ser Asp Asn Thr Thr
50 55 60

Leu Asn Phe Met Val Arg Leu Lys Asn Ile Asn Ala Lys Gln Gly Ile
65 70 75 80

Tyr Tyr Glu Asp Leu His Leu Ser Phe Ser Thr Arg Ile Asn Asn Ser
85 90 95

Ser Leu Leu Val Ala Asn Tyr Thr Val Pro Arg Phe Tyr Gln Gly His
100 105 110

Glu Lys Lys Ala Lys Lys Trp Gly Gln Ala Leu Pro Phe Asn Asn Gln
115 120 125

Thr Val Ile Gln Ala Val Leu Pro Asn Gly Ser Ala Ile Phe Arg Val
130 135 140

Asp Leu Lys Met Gln Val Lys Tyr Lys Val Met Ser Trp Lys Thr Lys
145 150 155 160

Arg Tyr Lys Leu Lys Ala Ser Val Asn Leu Glu Val Asn Glu Asp Gly
165 170 175

Ala Thr Lys Val Lys Asp Lys Glu Asp Gly Ile Lys Met Lys Ile Ser
180 185 190

Asp Ser Ser Pro Gln Arg Leu Thr Phe Phe Gln Val Cys Phe Ser Ile
195 200 205

Ile Cys Val Leu Met Asn Trp Leu Ile Phe Leu Ala Ile Arg
210 215 220

<210> 107

<211> 200

<212> PRT

<213> Arabidopsis thaliana

P59845PC00 sequence listing

<400> 107

Met Val Leu Thr Lys Pro Ala Thr Val Arg Phe Asn Gly Leu Asp Ala
1 5 10 15
Glu Pro Arg Lys Asp Arg Val Ile Leu Arg Gln Pro Arg Ser Ser Arg
20 25 30
Thr Ser Leu Trp Ile Trp Cys Val Ala Val Phe Leu Ala Ile Arg Pro
35 40 45
Arg Ile Pro Val Phe Asp Ile Pro Asn Ala Asn Leu His Thr Ile Tyr
50 55 60
Phe Asp Thr Pro Glu Phe Phe Asn Gly Asp Leu Ser Met Leu Val Asn
65 70 75 80
Phe Thr Asn Pro Asn Lys Lys Ile Glu Val Lys Phe Glu Lys Leu Arg
85 90 95
Ile Glu Leu Phe Phe Phe Asn Arg Leu Ile Ala Ala Gln Val Val Gln
100 105 110
Pro Phe Leu Gln Lys Lys His Glu Thr Arg Leu Glu Pro Ile Arg Leu
115 120 125
Ile Ser Ser Leu Val Gly Leu Pro Val Asn His Ala Val Glu Leu Arg
130 135 140
Arg Gln Leu Glu Asn Asn Lys Ile Glu Tyr Glu Ile Arg Gly Thr Phe
145 150 155 160
Lys Val Lys Ala His Phe Gly Met Ile His Tyr Ser Tyr Gln Leu His
165 170 175
Gly Arg Cys Gln Leu Gln Met Thr Gly Pro Pro Thr Gly Ile Leu Ile
180 185 190
Ser Arg Asn Cys Thr Thr Lys Lys
195 200

<210> 108

<211> 320

<212> PRT

<213> Arabidopsis thaliana

<400> 108

Met His Ala Lys Thr Asp Ser Glu Val Thr Ser Leu Ser Ala Ser Ser
Page 164

P59845PC00 sequence listing

1	5	10	15
Pro Thr Arg Ser	Pro Arg Arg Pro	Ala Tyr Phe Val	Gln Ser Pro Ser
20	25	30	
Arg Asp Ser His	Asp Gly Glu Lys	Thr Ala Thr Ser	Phe His Ser Thr
35	40	45	
Pro Val Leu Thr	Ser Pro Met Gly	Ser Pro Pro His	Ser His Ser Ser
50	55	60	
Ser Ser Arg Phe	Ser Lys Ile Asn	Gly Ser Lys Arg	Lys Gly His Ala
65	70	75	80
Gly Glu Lys Gln	Phe Ala Met Ile	Glu Glu Glu Gly	Leu Leu Asp Asp
85	90	95	
Gly Asp Arg Glu	Gln Glu Ala Leu	Pro Arg Arg Cys	Tyr Val Leu Ala
100	105	110	
Phe Ile Val Gly	Phe Ser Leu Leu	Phe Ala Phe Phe	Ser Leu Ile Leu
115	120	125	
Tyr Ala Ala Ala	Lys Pro Gln Lys	Pro Lys Ile Ser	Val Lys Ser Ile
130	135	140	
Thr Phe Glu Gln	Leu Lys Val Gln	Ala Gly Gln Asp	Ala Gly Gly Ile
145	150	155	160
Gly Thr Asp Met	Ile Thr Met Asn	Ala Thr Leu Arg	Met Leu Tyr Arg
165	170	175	
Asn Thr Gly Thr	Phe Phe Gly Val	His Val Thr Ser	Ser Pro Ile Asp
180	185	190	
Leu Ser Phe Ser	Gln Ile Thr Ile	Gly Ser Gly Ser	Ile Lys Lys Phe
195	200	205	
Tyr Gln Ser Arg	Lys Ser Gln Arg	Thr Val Val Val	Asn Val Leu Gly
210	215	220	
Asp Lys Ile Pro	Leu Tyr Gly Ser	Gly Ser Thr Leu	Val Pro Pro Pro
225	230	235	240
Pro Pro Ala Pro	Ile Pro Lys Pro	Lys Lys Lys Gly	Pro Ile Val
245	250	255	

P59845PC00 sequence listing

Ile Val Glu Pro Pro Ala Pro Pro Ala Pro Val Pro Met Arg Leu Asn
260 265 270

Phe Thr Val Arg Ser Arg Ala Tyr Val Leu Gly Lys Leu Val Gln Pro
275 280 285

Lys Phe Tyr Lys Arg Ile Val Cys Leu Ile Asn Phe Glu His Lys Lys
290 295 300

Leu Ser Lys His Ile Pro Ile Thr Asn Asn Cys Thr Val Thr Ser Ile
305 310 315 320

<210> 109

<211> 342

<212> PRT

<213> Arabidopsis thaliana

<400> 109

Met His Ala Lys Thr Asp Ser Glu Val Thr Ser Leu Ala Ala Ser Ser
1 5 10 15

Pro Ala Arg Ser Pro Arg Arg Pro Val Tyr Tyr Val Gln Ser Pro Ser
20 25 30

Arg Asp Ser His Asp Gly Glu Lys Thr Ala Thr Ser Phe His Ser Thr
35 40 45

Pro Val Leu Ser Pro Met Gly Ser Pro Pro His Ser His Ser Ser Met
50 55 60

Gly Arg His Ser Arg Glu Ser Ser Ser Ser Arg Phe Ser Gly Ser Leu
65 70 75 80

Lys Pro Gly Ser Arg Lys Val Asn Pro Asn Asp Gly Ser Lys Arg Lys
85 90 95

Gly His Gly Gly Glu Lys Gln Trp Lys Glu Cys Ala Val Ile Glu Glu
100 105 110

Glu Gly Leu Leu Asp Asp Gly Asp Arg Asp Gly Gly Val Pro Arg Arg
115 120 125

Cys Tyr Val Leu Ala Phe Ile Val Gly Phe Phe Ile Leu Phe Gly Phe
130 135 140

Phe Ser Leu Ile Leu Tyr Gly Ala Ala Lys Pro Met Lys Pro Lys Ile
145 150 155 160

P59845PC00 sequence listing

Thr Val Lys Ser Ile Thr Phe Glu Thr Leu Lys Ile Gln Ala Gly Gln
165 170 175

Asp Ala Gly Gly Val Gly Thr Asp Met Ile Thr Met Asn Ala Thr Leu
180 185 190

Arg Met Leu Tyr Arg Asn Thr Gly Thr Phe Phe Gly Val His Val Thr
195 200 205

Ser Thr Pro Ile Asp Leu Ser Phe Ser Gln Ile Lys Ile Gly Ser Gly
210 215 220

Ser Val Lys Lys Phe Tyr Gln Gly Arg Lys Ser Glu Arg Thr Val Leu
225 230 235 240

Val His Val Ile Gly Glu Lys Ile Pro Leu Tyr Gly Ser Gly Ser Thr
245 250 255

Leu Leu Pro Pro Ala Pro Pro Ala Pro Leu Pro Lys Pro Lys Lys Lys
260 265 270

Lys Gly Ala Pro Val Pro Ile Pro Asp Pro Pro Ala Pro Pro Ala Pro
275 280 285

Val Pro Met Thr Leu Ser Phe Val Val Arg Ser Arg Ala Tyr Val Leu
290 295 300

Gly Lys Leu Val Gln Pro Lys Phe Tyr Lys Lys Ile Glu Cys Asp Ile
305 310 315 320

Asn Phe Glu His Lys Asn Leu Asn Lys His Ile Val Ile Thr Lys Asn
325 330 335

Cys Thr Val Thr Thr Val
340

<210> 110
<211> 242
<212> PRT
<213> Arabidopsis thaliana

<400> 110

Met Asp Asp Glu Gln Asn Leu Val Glu Glu Met Asn Gln Gln Leu Leu
1 5 10 15

Ile Thr Val Ile Asp Thr Glu Lys Val Pro Glu Leu Arg Pro Ile Ser
20 25 30

P59845PC00 sequence listing

Ser Arg Ser His Gln Glu Ser Glu Pro Ala Asn Ile Ser His Trp Ser
35 40 45

Leu Leu Phe Lys Leu Phe Leu Ala Ile Thr Ile Met Gly Ala Cys Val
50 55 60

Ala Gly Val Thr Phe Val Ile Leu Ile Thr Pro Thr Pro Pro Thr Val
65 70 75 80

His Val Gln Ser Met His Ile Ser Phe Ala Asn His Asn Leu Pro Val
85 90 95

Trp Ser Ala Thr Phe Ser Ile Lys Asn Pro Asn Glu Lys Leu His Val
100 105 110

Thr Tyr Glu Asn Pro Ser Val Trp Leu Val His Arg Gly Lys Leu Val
115 120 125

Ser Thr Ala Arg Ala Asp Ser Phe Trp Gln Lys Gly Gly Glu Lys Asn
130 135 140

Glu Val Ile Val Lys Arg Asn Glu Thr Lys Val Ile Asp Glu Glu Ala
145 150 155 160

Ala Trp Glu Met Glu Asp Glu Val Ala Val Thr Gly Gly Val Val Gly
165 170 175

Leu Asp Met Val Phe Ser Gly Arg Val Gly Phe Tyr Pro Gly Thr Ser
180 185 190

Ala Leu Trp Gly Glu Gln Tyr Met Ser Ala Val Cys Glu Asn Val Ser
195 200 205

Ala Lys Leu Tyr Asn Val Asp Asp Glu Ile Tyr Gly Thr Asn Arg Ser
210 215 220

Val Leu Ser Phe Asp Gly Arg Leu Val Cys Ser Val Arg Leu Pro Lys
225 230 235 240

Tyr Pro